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The New Parochialism

The article published on this page was prepared and submitted to Coal Age by a prominent coal-mining man. All of our readers may not agree with the statements made, but the general idea presented is worth thinking about. This is a time when all wasted effort must be stopped. Write us your opinion in the matter.—Editor.

IN some ways it has been well for each nation to specialize and do what it could do best. But now that transportation by sea and also by land has broken down, most of the belligerents realize it would have been better if they had not specialized quite so much. For some of the specialization did not come from any particular aptitude for the growing or making of any particular item, but just out of a lazy indifference about certain forms of endeavor. Great Britain could have led in the coal-tar industry just as well as Germany, had she only willed it.

Now we also, in America, have been specializing all too much. Anyone will tell you that such and such a state is largely devoted to such and such products, whereas it might pursue a more generously rounded existence and make many things which it now imports. West Virginia specializes on coal and imports all too many foodstuffs. Pennsylvania gives almost her whole attention to the manufacture of raw materials and lets other states finish the products. The cotton belt grows cotton and does not produce enough foodstuffs to feed itself.

AS a result the railroads are hurrying—or should it be dallying?—from place to place, transporting things that there would be little need to transport if we had had a little more parochialism, if we had made the various sections, the various states, counties and communities more self-sufficing.

There has been too much railroading of raw material across continent, solely to be made into goods to be transported back to points from which the raw material came. Talk about routing material through a factory! Never was a factory so badly routed as that great international factory, the world, and the great national factories, the United States, the British Empire and France. It would do us good to draw the routes on paper and show how we assemble goods from all corners of the earth, sending them back in the opposite direction and often putting them over the same route in both directions several times.

WE need, as Carl Vrooman is pointing out, a new parochialism; the word is not his. We need to produce all we want as far as we can in one unit of territory. Of course, parochialism is opposed to liberalism, and the interchange of products is good for the world in general; but during the war at least it is well to buy everything, including coal, near home. We need to question not how far we can ship, but how near we can find a seller or secure a purchaser. Having that partly accomplished, perhaps we may be able to find that the railroad service now provided us will meet our needs.

The miners with their gardening can fill in their spare time and idle days and save the loading and handling of many freight cars filled with vegetables. The operator can work neglected farms and save in the transportation of hay to his mule barn. Occasionally, too, if we gave the matter due thought, we might shorten transportation considerably by buying from points nearer home and so not only relieve the transportation situation, but obtain quicker service.

Much of our purchasing is the outcome of obsessions. We associate in our minds certain towns and certain firms with specific products, and we never conceive that any other town or any other firm would serve our purposes just as well or better. But war and the breakdown of railroad facilities is causing us to go back to the parochialism of the past, when every town was largely self-sufficing.

Ideas and Suggestions

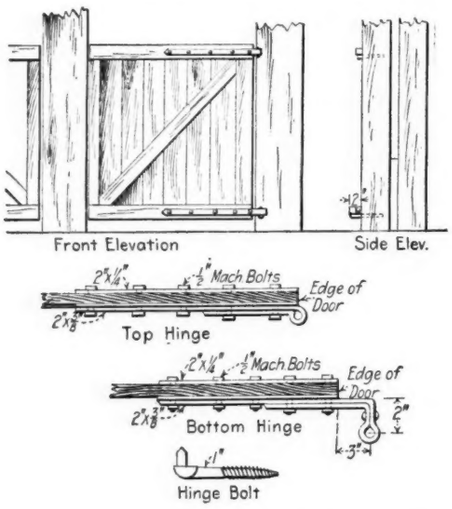
This is a time when each and all of us must give the best that is in us. We must find new ways of doing things; we must discover short cuts and establish systems leading to higher efficiency. In fact, we must do more work with fewer men and do it in less time. Hundreds of coal-mining men have perfected devices and installed methods that hundreds of other mining men would like to know about. These two pages are the best place to make such information public, and that is one way we can help win the fight we have on our hands. Send us a good practical idea or suggestion today.—Editor.

Self-Closing Door for Mine Shaft

By H. J. Brown*

Kinks that are not always new are sometimes nevertheless good.

Some time ago an institute bulletin published pictures of a self-closing shaft gate in connection with an article. They didn't look right, but gates hung in accordance



THE HINGES AND THE DOOR THEY SUPPORT

with the accompanying illustration are square with the world.

While doing some consulting work for a certain company it became necessary to replace the shaft "bars," for reasons of safety, with something that would stay closed. I gave the boss carpenter the necessary instructions, only to be met with a blank stare. They do not use gates much hereabouts.

I had to make sketches. The blacksmith did his part, and the boss carpenter, against his better judgment, hung them—and with them his convictions that they wouldn't work.

The gate hangers here shown are only the old hinges that supported the gates we used to swing on when we were kids, but the gates hang straight and stay shut.

*North Holston, Va.

Spread the Light

By Sim C. Reynolds*

Some time ago I received from the Federal Government one of its many bulletins and pamphlets dealing with coal mines and mining practice. A careful perusal of this particular bulletin prompted the thought that dissemination of such a treatise among the thousands of miners handling and using explosives in mines would be one of the wisest plans the Bureau of Mines could put into execution. There also came the thought that approximately nine of every ten of the men that particular bulletin should have reached could not understand English as it is spoken ordinarily, let alone read it. Therefore, not being sure in the premise, I wrote to the proper authorities, asking if that paper and others equally important to the industry were printed in other languages than English. I was advised that they were not.

Now, no one identified with mining doubts for a moment the great good these pamphlets do, yet one cannot close one's eyes to the fact that in a large measure they fail of their purpose. They do not reach nine of the ten men they are printed to help. They are, as matters now stand, available only, with rare exceptions, to the English-speaking miner, who is generally of the official staff. The very men who should be benefited by these papers seldom ever see them; the vast majority could not read them if they did see them.

The Bulletin No. 17, for instance, is one peculiarly profitable to the miner himself, and is doubtless intended by the Bureau of Mines for his guidance. Yet, if one were to stand at the pit-mouth some morning and hand a copy to each of the men going to "the face"—to the men who dig and load the coal, to the men who handle and use the explosives with the safe use and handling of which Bulletin No. 17 deals—90 per cent. of them couldn't make head or tail of any part of its contents except the pictures.

Despite the fact that this bulletin advises its readers that under no circumstances should they do so, most of these men, like the young Slav I saw some time ago with a set of molars that would make proud a "society dame," would go on crimping the cap on the fuse with nature's pincers, regardless of repeated warnings that up to the present time no human jaw has been found capable of sustaining the shock developed when the cap acts contrary to its usual function, and goes off in the mouth.

With Bulletin No. 17 in their pockets most of our present-day miners would, thirteen at a time, crowd into a cage intended at most for ten, and "ballast" the bottom of it with a box of dynamite and sundry sharp-edged tools. I missed the coroner's inquest over the unlucky (or careless?) thirteen, but heard later that "something happened" midway down the shaft and, according to the legal luminary employed to defend the company's negligence (the miners being gone they needed no defense)

*Houston, Penn.

"the extra weight probably caused the bottom to drop out of the cage"!! No doubt.

And if our "safety-first" propaganda doesn't reach the men who *use* explosives in a form that they can *understand,* the chief aim of all this free dissemination of pamphlets and bulletins is being lost. The officials who might teach them are as a rule too busy; many of the companies, such, for instance, as the one which allowed thirteen men and a box of dynamite upon a cage built for ten men and no dynamite, with disastrous results, preach "safety first" wholesale and practice it retail.

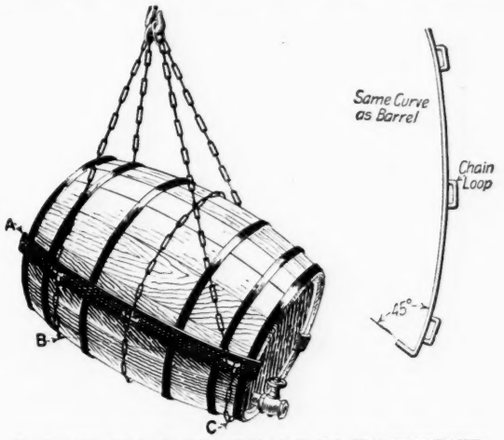
Also, apropos of the need of wider teaching as to the dangers in the handling of explosives, which I again assert can be largely accomplished by a change in the methods of the government department having the printing and issuance of mine bulletins in its charge, I recall a trip I made last winter to a mine just opening. Much surface work was being done and consequently much blasting. The dynamite had frozen the night before. Half a dozen men were sitting in a rough shack, in the center of which burned fiercely a round, "cannon" stove, with a bushel or more of ashes lying, some cold, some newly raked out, on the dirt floor. And half buried in the warm part of the ashes I spied several sticks of dynamite undergoing the thawing process.

The boss of the gang assured me there was no danger, nevertheless, while yet cold, I suddenly came to the conclusion that there were enough people in that shanty already, and that I preferred being outside looking in to being inside looking out, as I was sure, despite the boss's assurance to the contrary, that there was liable to be somewhat of a rumpus and some hurried exits from that dining room if that dynamite got too hot.

This brings me again to the point I desire to convey—that the information, valuable and important to every man in the industry, contained in the printed matter intended by the Government to be of service to the miner should by all means and as soon as possible be printed in every language necessary, in the very simplest of words and descriptions, accompanied by all the pictures necessary to elucidate the text, and a copy furnished *every* man who has to handle or use explosives, or in other ways might be affected favorably by the information contained in the various pamphlets. Such matter should be distributed absolutely free of charge. Fortunately, I am glad to say, most of these publications are at present given freely, but not extensively enough to obtain maximum results.

Transferring Oil to Tank

To empty barrels of heavy engine oil by the hand-pump method in cold weather is "some job" and led to making the following rig, which eliminates much of the labor, says R. F. Hamilton in *Power.* Two pieces *A* of iron $\frac{3}{8}$ x $1\frac{1}{4}$ in. and 1 in. longer than the barrel were bent as shown, the 1 in. extra length being bent back at about 45 deg. to hook over the edge of the barrel. The chain loops are of $\frac{3}{8}$-in. round with the ends put through the drilled holes and riveted on the inside of the side pieces, or "spacers," and are about 5 in. from the ends. The "cradle" chains *B* and *C* are the length of half the circumference of the barrel near the ends. The length of the four sling-chains depends upon the angle at which the barrel is to hang. It may be wise to extend the chains over the top or around the barrel or to put one in the middle fastened with a clamp to guard against the

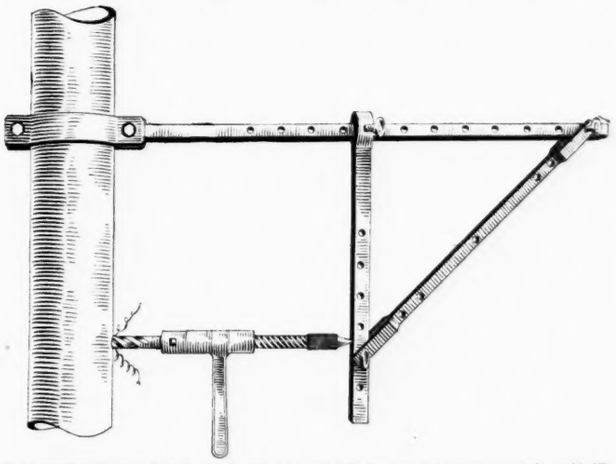


BARREL ELEVATED READY TO BE EMPTIED

barrel tipping over. A short nipple with a valve is screwed into the head of the barrel to regulate the flow of oil.

Handy Ratchet Brace for Pipes

An "old man" that is handy for use with a ratchet drill, avoiding the usual trouble in getting it fixed solidly, consists of two $1\frac{1}{4}$-in. bars, a brace and a clamp, as shown. To use this outfit a suitable clamp must be made for the particular size of pipe or shape and size of column to be



RATCHET BRACE, OR "OLD MAN," ATTACHED TO PIPE

drilled. A number of small holes should be drilled and countersunk to receive the tapered "center" of the ratchet. The brace is most conveniently made of two bars shaped and fastened together as shown. The same outfit can be used on square columns, I-beams, etc., by having the clamp made of a suitable shape.—J. E. Noble in *Power.*

Every mining company that can afford to do so should devise some plan whereby its employees can purchase a Liberty Bond on the installment plan. This is a kind of patriotism that is really of practical value and reaches to the heart of the whole matter. On page 66 in the advertising section this week is Uncle Sam's first official plea for help. Let every one of us heed it in such generous fashion that the world will know America is a nation of doers, not talkers.

Anthracite Coal Strippings Near Scranton and Wilkes-Barre, Penn.

By Thomas F. Kennedy*

SYNOPSIS—Coal along the outcrop of various beds may be mined by stripping more cheaply than by any other method. The economic area and depth depend upon the nature of the overburden. This is determined before actual stripping is begun. For this purpose, well drills have been found superior to diamond drills.

The object of this article is to give a brief but general description of several of the anthracite coal strippings now in operation in the vicinity of Scranton and Wilkes-Barre, Penn. The strippings described are being carried on by the Delaware & Hudson Coal Company.

It will be noted that in the upper anthracite regions the average thicknesses of overburden and coal are small and that the pitch is moderate, while in the lower regions the opposite conditions prevail: namely, the average thicknesses of overburden and coal are comparatively large and the coal measures, in general, possess a decided pitch.

Photographs and typical cross-sections of various strippings are here presented to make the explanations clear.

The Cooper Bed Stripping, Plymouth No. 4 Colliery, being the most extensive, will be considered first. This stripping, located in the Borough of Larksville, approximately one-half mile northwest of Plymouth No. 4 Colliery, at Plymouth, Penn., embraces an original area of twelve acres. The Cooper Bed is nearest the surface, overlying the Bennett Bed, which has undergone its first mining.

Owing to the poor roof overlying the Cooper Bed and the rolly nature of the measure, open pit mining was considered the only recourse for winning the coal in the most economical manner. Diamond drill holes, 1¼ in. in diameter, placed 100 to 150 ft. apart, defined the economic stripping limit and furnished data for the calculation of quantities of overburden and coal and the determination of the degree of pitch and strike of the bed. The information obtained showed the average thicknesses of overburden and coal to be 30 ft. and 9 ft. respectively. The overburden consisted of approximately 50 per cent. clay and 50 per cent. shale and hard sandstone, while the coal, streaked with several inches of bone, showed a fair quality.

*Assistant engineer, stripping department, Delaware & Hudson Coal Co., Scranton, Penn.

Referring to Fig. 4, the relative positions of the surface, Cooper and Bennett beds, can be seen. At the northern end of the stripping, the proximity of the coal measures is distinct, 3 to 4 ft. of rock separating the beds for approximately 100 ft. in a southerly direction. With the exception of the roll (see Fig. 2), the degree of pitch of the Cooper Bed does not exceed 10 deg., and the bed lies perfectly flat in some places.

The stripping operations were begun in 1908 and, up to the present time, approximately one-fourth of the coal area has been stripped of its overburden and the coal removed.

At present, the Gaylord Engineering and Construction Co., Scranton, Penn., has charge of removing the overburden, two 70-ton steam shovels being used. The work is progressing rapidly, and the expectations are that the stripping will be completed within one year.

The Hillman Bed Stripping, located in the east end of Wilkes-Barre, Penn., is bounded approximately by the new Baltimore No. 5 Colliery on the north, by the Delaware & Hudson R.R. tracks on the east, by Conyngham Ave. on the south and by Kidder St. on the west.

Preliminary investigation and thorough study of the roof conditions of the workings approaching the outcrop of the coal bed disclosed the fact that the roof for several hundred feet is composed of soft sand shale that would make the mining of coal in this area hazardous and expensive. This was especially true of the gangway and airway known as Youngs Slope (see Fig. 3), driven to the outcrop on the west side. An average of 5 ft. of top coal was left for roof protection. The conditions warranted a more extensive investigation of the problem, and so prospecting of the area began in March, 1916. Holes were drilled 100 ft. apart. After plotting the bore holes and fixing the practicable stripping limit, it developed that upon the area of 4½ acres to be stripped there were located two standard-gage railroad tracks, a creek 30 ft. wide, a 30-in. terra-cotta pipe sewer in the bed of the creek and a 6-in. water line. These conditions presented a problem requiring no little study, but were ably handled by the engineers that had charge of this operation.

To free the area of the foregoing features, it was necessary to change the course of the creek, the sewer and the water line, and to shift the railroad tracks outside the stripping limits. The changing of the course of the creek

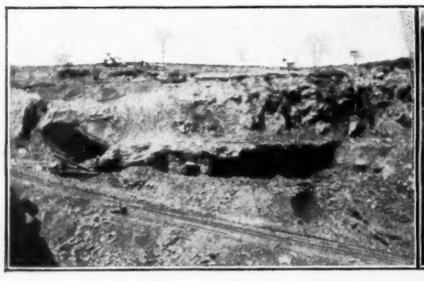


FIG. 1. COOPER BED STRIPPING, SHOWING BOTH BEDS

FIG. 2. COOPER BED STRIPPING, COAL BEING MINED ON ROLL

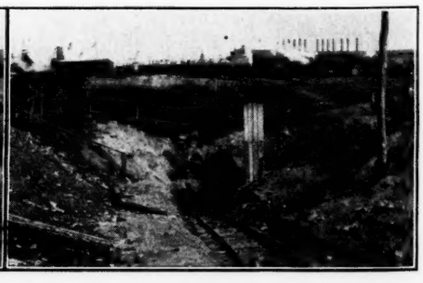


FIG. 3. HILLMAN BED STRIPPING, SHOWING YOUNGS SLOPE

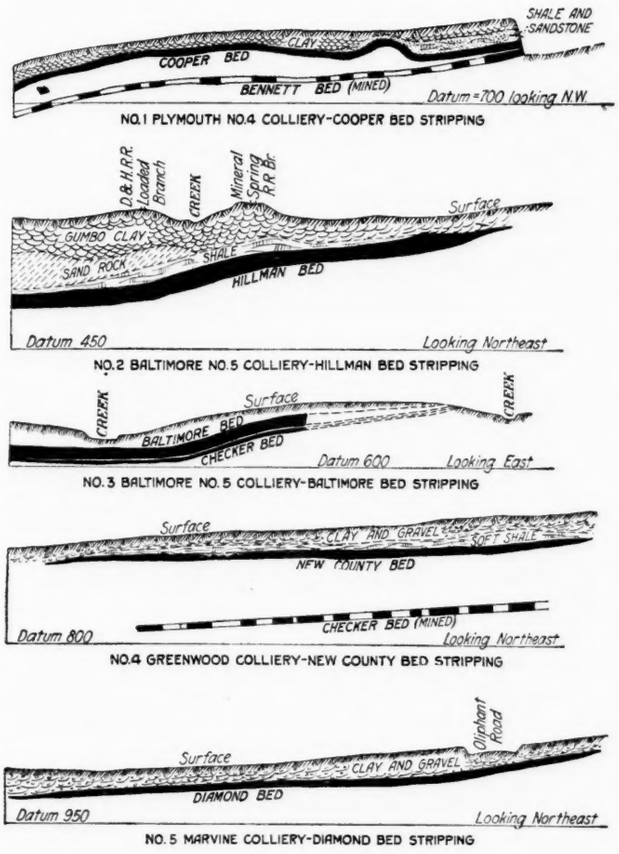


FIG. 4. CROSS-SECTIONS OF THE VARIOUS STRIPPINGS

necessitated the erection of a concrete culvert under the Lehigh Valley and Delaware & Hudson R.R. tracks. A portion of a culm dump near-by was removed in order to furnish a dumping place for the spoil to be taken from the stripping.

The borings showed the overburden to consist of tough gumbo clay, sand, sandstone and shale ranging from 20 ft. to 60 ft. in thickness from the westerly outcrop to the sandstone roof cover. The seam, the average thickness of which is 10½ ft., has a pitch of 18 deg. in a southeasterly direction (see No. 2, Fig. 4).

The stripping was started in the fall of 1916, by Timothy Burke, contractor, of Scranton, Penn. Much credit is due Mr. Burke and his force for the manner in which they handled and completed the various changes. The removal of the overburden is now in progress and will take approximately 1½ years to complete.

The Baltimore Bed Stripping, located one-fourth mile east of the Hillman Bed Stripping, lies in a small basin and is known as the Back Basin Stripping.

The Baltimore Bed is a surface seam and is separated from the Checker Bed below by 3 ft. of rock stratum (see Figs. 4 and 6). As the outcrop of the Baltimore Bed was approached, soft shale roof was encountered and this prevented any further underground mining in this measure. Robbing of pillars was not only extremely dangerous and expensive, but also wasteful. It was consequently deemed advisable to strip considerable areas of both solid and pillar coal.

The economic stripping limits defined an area of approximately five acres; namely, two acres of solid and three acres of pillar coal. The average thickness of cover, consisting of 50 per cent. clay and 50 per cent. shale, is 29 ft., while the thickness of the Baltimore and Checker beds are 20 ft. and 6 ft. respectively. One acre of solid coal has been stripped and removed. The seams have their greatest pitch of 20 deg. in a northeasterly direction. This makes it extremely difficult for the steam shovel to dig out the coal. A small plane 80 ft. long and two stationary engines are required to transport the coal from the pit to the dinkey tracks near-by.

A flume was built to conduct the water from the creek across the stripping area. Stripping operations were begun about two years ago; it is predicted it will take two more years to complete the work. The Delaware & Hudson Coal Co. has assumed the responsibility of removing the overburden and coal, and fine progress is being made.

The site of the New County Bed Stripping is 1½ miles southeast of the Greenwood Colliery, Greenwood, Penn. The greater portion of this stripping is on the Thompson and East Side Bondholders estates, 200 ft. southeast of Birney Ave.

The New County Bed, the surface measure in this locality, is mined to a line running parallel and 100 ft. from the southeasterly line of Birney Ave. Owing to the bad roof and thinning out of the coal along this line, mining was discontinued. An examination of the territory above the supposed outcrop of the bed proved three available strippings areas containing 4, 12 and 4 acres respectively. The larger area, known as the middle section, is on the Thompson and East Side Bondholders estates; the other two sections lie several hundred feet northeast and southwest of the middle section.

The average thickness of the overburden overlying the coal areas is approximately 18 ft., while the coal thickness averages 5 ft. Twenty-five per cent. of the over-

FIG. 5. SHOVEL MAKING FIRST CUT AT BALTIMORE NO. 5 COLLIERY

FIG. 6. EASTERN OUTCROP OF BALTIMORE AND CHECKER BEDS

FIG. 7. FIRST CUT ON NEW COUNTY BED STRIPPING

burden is soft shale, while the remaining 75 per cent. is composed of clay, gravel and boulders. The pitch of the bed is 3 to 5 deg. in a northeasterly direction. Several test pits 3 x 8 ft. showed a fair quality of coal.

The contract for removing the overburden was let to the Dick, Drake & Sharkey Co., of Hazleton, Penn. Stripping operations began in April, 1917. The contracting firm expects to complete the work of removing the overburden in about 1¼ years.

The location of the Diamond Bed Stripping is on the Marvine Farm, adjoining the Mt. Carmel Catholic Cemetery, about one mile northeast of Dunmore Borough, Penn. This stripping area, consisting of nearly five acres, is underlaid with a bed of coal averaging 5 ft. in thickness. The overburden, composed of clay and gravel, has an average thickness of 16 feet.

The Diamond Bed, the surface seam in this vicinity, is mined to the outcrop, which is parallel to and about 1000 ft. from the Olyphant Road. An examination of the area above the outcrop proved that the Diamond Bed was washed out, but was again present about 600 ft. from the outcrop. The measure has a pitch not exceeding 6 deg. in a southeasterly direction. The quality of the coal is fair.

This land, composed of very rich and fertile soil, is known as the Marvine Farm, from which the company obtains annually a fine grade of hay. The contract for the stripping has been let to the Gaylord Engineering and Construction Co., of Scranton, Penn. The work of removing the overburden is expected to start shortly. The complete removal of the overburden will take about six months.

Sanderson cyclone well drills, equipped with 6-in. bits, were used for the prospecting of all stripping areas with the exception of the Plymouth Stripping, where the diamond-drill method was employed. The well drills were found to be just as efficient and cheaper than the diamond-drill method.

Various stripping propositions are being studied by the different coal companies in the upper regions, and it is only the matter of a short time when more active stripping operations will take place.

The stripping propositions above described were ably carried out under the direction of Eli T. Conner, consulting engineer for the Delaware & Hudson Coal Co. The operating department of this company is now in direct charge of all stripping work.

Sanding Rails

By K. Rankin*

Sand is used on locomotives to increase the adhesion between the driving wheels and the rails. Its use is really an emergency measure to assist the machine in passing over a slippery stretch of rail, up a steep grade, starting heavy loads stopping suddenly, and when the locomotive is too light for the work it is doing. Whenever increased adhesion is required sand is useful, for it increases the effective friction between locomotive and rail. The increase in resultant drawbar pull for cast-iron wheels is usually considered as being 5 to 10 per cent., and for steel-tired wheels from 5 to 7 per cent.

Many locomotive runners use sand indiscriminately just because it happens to be available. This is a great mistake and one which usually results injuriously for the apparatus. Sand used needlessly and too often sometimes works into the bearings and moving parts, causing havoc by interfering with the oil flow and cutting the bearings and commutators and interfering with commutation.

Another effect that follows the use of sand, especially in excessive quantities, is that doing so materially reduces the capacity of the locomotive by decreasing the effective trolley voltage. To all intents and purposes sand is a nonconductor of electricity, and placing it between wheels and rail in the direct path of the current flow is equivalent to inserting a resistance, if not an actual insulation in the circuit. This is the same as reducing the voltage and current carried by the circuit. Since sand is generally used when starting, when the required pull and also the current upon which torque depends are greatest, the voltage drop is highest and the sand may so seriously reduce the voltage and volume of the current that the locomotive cannot start its load. In cases of this kind it is often claimed that there is insufficient copper in the trolley, whereas the current is cut down by the high resistance interposed by the film of sand on the rails.

Still another effect of the promiscuous and excessive use of sand is that persons touching the locomotive may receive a nasty shock. When a film of sand exists between wheels and rail the frame of the locomotive as well as the wheels become partially insulated from the rails. As the current in passing from the trolley goes through the motors to the wheels and thence to the rails, it is obvious that with the wheels isolated if not actually insulated from the track the frame of the locomotive is raised to almost the same potential as that of the trolley. Any person standing upon damp ground or upon the rail and touching the frame of the machine will then receive a shock which may be dangerous because it may cause the recipient to stagger or fall. The use of sand in large quantities has often been the cause of creating a feeling of dread among the men, not so much because of the severity of the shock as from its uncertainty.

It is a wise plan, therefore, not to use sand merely because it happens to be available. It is available for emergency, for special conditions such as slippery track, excessive grade or load, or because the locomotive is too light for the work imposed. If a locomotive is so far too light that sand must be used all the time, the load should be lessened, a heavier locomotive obtained or steel-tired instead of cast-iron wheels should be employed. This latter change improves the drawbar pull between 5 and 10 per cent. Sand is an expense and an annoyance except when used occasionally and from necessity.

*Chicago, Ill.

One Way to Coöperate

These are strenuous times. The demands that have been and will be made upon the coal industry are excessive. It is not only the privilege but the duty of every man to produce the most coal possible. Fuel makes the wheels go round—in war even as in peace. If you know of a useful device, a short cut, a kink, or an improved system of mining, that has aided you in your work, *Coal Age* wants to publish it so that it may aid others. Knowledge is a peculiar thing—the more of it we give, the more we have. Give others the benefit of your experience and your own store of information will grow.

Federal Trade Commission's Report on Bituminous Coal Trade

SYNOPSIS—The Federal Trade Commission makes a lucid and reliable report on the conditions ruling in the coal industry. It says that there is no scarcity of coal in the ground, that the demand for coal has increased immensely and that the shortage of cars is the main difficulty. It mentions several methods of meeting transportation needs, opposes the enlistment and conscription of miners and advocates the regulation both of the price of coal and its distribution.

The following report of the Federal Trade Commission, dated May 17 and issued May 19, is addressed to the speaker of the House of Representatives and is signed by William J. Harris, chairman; Joseph E. Davis and John F. Fort.

Pursuant to a resolution introduced by Congressman Rainey in the Sixty-Fourth Congress (H. R. 352) directing this commission to make inquiry into the conditions in the production and distribution of bituminous coal, the Federal Trade Commission presents the following report. This report is preliminary and not final.

Of late there has been a marked change in the conditions of bituminous coal production and distribution. The Federal Trade Commission has taken cognizance of these facts. There have been recently held by the commission a series of conferences in Washington and in Chicago. At these conferences there appeared before the commission representatives of the following interests: (1) Operators engaged in the mining of bituminous coal; (2) transportation lines, appearing as large consumers and carriers of bituminous coal originating on their lines; (3) representatives of municipal public utilities, manufacturing and other industrial enterprises, which are important consumers of bituminous coal.

Each of these three classes has been heard in detail, both orally and by the presentation of such written statements as they desired to make. A large mass of information has thus been gathered. The present report is based on this information, together with that previously obtained in this investigation.

THE PRESENT SITUATION

There is no scarcity of coal in the ground. There is sufficient coal available in the bituminous coal mines now being operated not only to supply the present demand, but also to supply a greatly increased demand. At present, however, there is a shortage of bituminous coal at the points of consumption.

In the East, the principal use of bituminous coal is in the making of steam for transportation and industrial use. In the Central States and the South, while most of the output is used in making steam, a part goes into domestic consumption. The unprecedented demands for this fuel during the past six months, together with the difficulties of rail and of water transportation (particularly by water to the markets of New England, the Great Lakes region and along the Ohio River), have not only absorbed the coal as fast as it could be shipped from the mines, but have also led to almost complete exhaustion of the coal stored at tidewater points, and at the docks on the Great Lakes.

In the face of a probably greatly increased demand for bituminous coal on the part of the Government for military purposes, for increased transportation, for the manufacture of munitions of every description, and for many other forms of industry, the necessity of mining and distributing more bituminous coal than ever before, both to supply current needs and to replenish exhausted storage, is obvious. The country faces a serious state of affairs in obtaining a commodity which is basic to practically every form of its military and industrial activities.

Several of the other belligerent countries have had to meet this same problem, and finding their coal supply seriously endangered, they have taken far-reaching governmental action to safeguard it. In England the Government took complete control of the coal mines after less radical methods of regulation failed. The French Government has drawn up a scheme for dividing France into three coal zones in order to equalize distribution, and the Government becomes the sole vender. On May 2, 1917, the Russian provisional government took over all the coal mines of that country with a view to control coal distribution and prices. Soon after the outbreak of the war, Germany took measures to centralize the whole coal industry of the Empire under Government control. The Italian Government imports all the coal brought into the country and acts as a clearing house for its distribution.

Recognizing the importance of this problem in the United States and the seriousness of the fuel situation, the Federal Trade Commission is making this preliminary report, based on its investigation thus far, with the thought that its information relating to the causes of this situation, and its suggestions as to possible remedies, may be of value to the present Congress.

CAUSES OF THE PRESENT SITUATION

1. Increased Demand—The marked increase in demand began to be felt about six months ago. In 1916 the shipments of bituminous coal from the mines amounted to about 509,000,000 tons, or about 66,000,000 tons more than in 1915, when previous records in production had been surpassed. Nevertheless, the demand has recently increased to such an extent that not only the unprecedented output of 1916 has been consumed, but stored coal accumulated from the production of previous years has also been practically exhausted. For example, on the docks of Duluth and Superior, there have usually been carried over, at the opening of navigation, some 3,000,000 tons, but this year when navigation opened the docks were practically empty.

The increased demand has been largely due to industrial expansion and to increased railroad traffic. In many industries plants have run two or even three shifts, while most railroads have transported more freight tonnage than ever before. In some sections of the country, particularly in the Northwest, an exceptionally cold winter led to the consumption of more bituminous coal than usual for heating purposes.

2. Shifting of Markets—Much of the increase in demand was concentrated in certain localities. There were transportation difficulties due to unprecedented burdens laid by all classes of freight on both rail- and water-transportation facilities. All this led to a considerable shift to other sources of supply in the markets usually supplied from certain coal fields. For example, coal mined in western Pennsylvania, eastern Ohio and West Virginia did not reach the markets of the Great Lakes and the lower Ohio in the usual quantities. This was because of increased demand from nearer markets, car shortage, decreased lake-transportation facilities, low water for a considerable period on the Ohio River and floods in the West Virginia mining region. Consequently the Indiana-Illinois fields have been drawn on to supply the deficit. Thus, the tonnage in commercial shipments (coal not for use of railroads) sent to Michigan from the mines of the Illinois-Indiana fields is reported to have been over 17 times as great during the nine months from April to December, 1916, as it was during the entire year preceding.

One of the important results of this shifting of markets was a buyers' panic, due to the uncertainty of consumers with regard to getting coal from their regular sources of supply. This led in many cases to a frantic bidding of buyers against each other, for that proportion of the coal supply (usually known as "spot" or "free" coal) which the mine operators were able to produce and ship in addition to the part of their output sold under contract.

The proportion of "free" to "contract" coal has varied widely between different fields and mines, but the usual estimates are that from 70 to 90 per cent. of the bituminous coal mined is usually sold under contract. Due to the inability of several of the coal fields to adequately supply their usual markets, and to the great increase in the demand for coal, which had not been foreseen and contracted for by the consumers, the prices of "free" coal have risen enormously in all the markets.

3. Inadequate Transportation Facilities—While, as previously pointed out, there is no lack of coal in the ground, or of mines from which it can be obtained, the fact must be borne in mind that few soft coal mines are equipped to store coal. The coal must be loaded into railroad cars as fast as it comes out of the mine. As a general rule, miners do not go into the mine unless the cars necessary to take care of the day's output are on hand at the mouth of the mine.

Cars enough to carry away the coal as fast as it can be mined are therefore a prime necessity. During the past six months, from a variety of causes, the railroads have not furnished or have not been able to furnish cars equal to the productive capacity of the mines. Furthermore, where coal has to be carried part of the way by water, there has been difficulty in getting enough boats.

The principal causes for a lack of adequate rail transportation have been: Car shortage, embargoes on the movement of freight cars, lack of sufficient motive power and, to some extent, abuse by shippers and consignees of reconsignment and demurrage privileges. Car shortage in some cases appears to have been due to lack of sufficient cars suited to carrying coal; in others, to the diversion to use in other industries of cars generally available for the movement of coal and in others to the much longer hauls required, due to the shift of markets from their normal sources of supply, which required more cars than usual to distribute the same tonnage.

Lack of terminal facilities adequate to handle the immense volume of freight consigned to certain points resulted in great congestion at those localities. Railroads on whose lines the shipments originated had to place embargoes against shipments consigned to such destinations, until the congestion could be relieved. In some cases there was also a lack of sufficient locomotives to move the coal from the mines to the consumer. Some of the car shortage appears also to have been due to abuses by shippers of reconsignment privileges, and of consignees of demurrage privileges in the unloading of cars at destination. In some instances mine operators and brokers appear to have taken advantage of such reconsignment and demurrage privileges so as to secure a temporary storage of coal in connection with speculative activities to obtain extortionate prices from coal consumers.

The principal causes for a lack of adequate water transportation have been: Diversion of boats in the coastwise coal trade to other lines of ocean traffic; diversion of boats in the lake coal trade to ocean traffic, and the conflict of the demand for iron ore and grain transportation with the demand for coal transportation.

COAL LEFT ON DOCK AND WATER FREIGHT TAKEN

This conflict has occurred because of the higher freights paid for eastward-bound iron-ore and grain transportation than for westward-bound coal. The delay incident to loading and unloading coal, and the fact that three of the highly profitable grain or ore cargoes could be transported in the same time in which only two could be carried, if coal were taken westward, has resulted in boats, suitable for carrying coal, going westward empty, using water as ballast instead of coal.

4. Labor Conditions—Statements made at the commission's hearings by mine operators from different coal fields indicate that in some regions there has been and still is an actual shortage of mining labor. The following reasons are generally ascribed: 1. The wages offered in other industries are often higher than those paid in the mines. 2. The lack of full-time employment in coal mines due to insufficient car supply often necessitates shutting down the mines from two to three days in the week, and sometimes running them only part of a working day. Since many of the men are paid on the basis of the tonnage they mine, the resulting enforced idleness cuts down the actual wages received. 3. There has been a considerable emigration of alien miners, who have been called to the colors of the various warring European nations, and there has been little new immigration from any source to fill their places. Some of the Southern mining fields have been seriously hampered by the movement of negro laborers to the North, generally to other industries than coal mining. This migration is probably ended.

5. Increased Costs of Production and Distribution—Considerable information in regard to increases in costs of production and distribution was submitted by coal operators at the commission's hearings, or has been gathered directly by the commission's agents. These increased costs, as far as production is concerned, are comprised chiefly in cost of labor. While there has been a great increase in the prices of supplies, the increase in the cost of supplies per ton of coal has been a much less important factor than is generally claimed. In the distribution there has also been some increase in cost, mainly in increased cost of transportation to the point of consumption.

The figures already submitted to the commission in regard to costs and to prices at the mine show that most of the present prices now being charged, both on "free" coal and on such few new contracts as the mine operators are entering into, are far in excess of the costs as shown by the operators' books. Many of the operators frankly take the position that they are trying to get for their coal the highest price possible under the present demand, and are refraining, even at prices greatly increased over last year, from contracting their output to the extent of their usual custom.

They defend this action by claiming that under the operations of the law of supply and demand they have for many years past been getting little more for their coal than the bare cost of production; that the mining of bituminous coal during that period has been a most unprofitable industry; and that this is their chance to recoup themselves for the losses of several years. Accordingly, they are demanding prices at the mine today, which run from fifty per cent. to several hundred per cent. over the cost of their output.

As a result of this policy, much of the bituminous coal output has been auctioned off to the highest bidders. This has resulted in great profits to certain operators and in special hardship to municipal public utilities, hospitals and other public and private charitable institutions, and to domestic consumers, especially in the West and South, where relatively little anthracite is used.

6. Lack of Sufficient Storage Facilities—The most economical way of handling coal is by loading it into cars as it comes from the mine, transporting it to the point of consumption, and delivering it in the same car direct to the retailer or large consumer. At times, there are adequate transportation facilities to keep the coal moving steadily in this way. But the consumption of bituminous coal is largely influenced by seasonal changes, the demand normally being heavy in fall and winter months, and lighter in the spring and summer.

This leads, in normal years, to frequent shutting down of mines, because of lack of orders, at a time when there are plenty of coal cars, and conversely to traffic difficulties at other times, largely due to inability to secure enough cars to care for the current demands. The obvious remedy for such a state of affairs is the establishment of storage facilities, preferably near the centers of consumption.

But the relatively great expense of storing coal has prohibited any general establishment of adequate storage facilities. Thus it has happened that many times during the past six months the chief cities of the United States have been faced with a coal shortage which threatened to stop their street cars, cut off their electric light and power and their gas, and shut down the manufacturing industries which support their population.

7. Speculative Activities of Some Mine Operators and Brokers—As already pointed out, from 70 to 80 per cent. of the output of the bituminous coal is sold under contract by the mine operators. It is estimated that the railroads of the country consume about one-third of the total production of bituminous coal. Practically all of the railroad supply, in normal times, is under contract. Of the "free" coal produced by the mines, probably about half is sold by them direct to the consumer. The remainder of the "free" coal and a small part of the coal sold under contract reaches the ultimate consumer through the medium of middlemen, such as brokers and retailers.

Charges of extortionate prices on the part of mine operators and brokers have been brought to the attention of the commission. According to some informants, various mine operators and brokers, through abuses of the reconsignment and demurrage privileges granted by railroads in order to facilitate the regular distribution of coal, have created or increased local shortages and extorted exorbitant prices from the consumers. These charges are now under investigation by the commission.

SUGGESTED REMEDIES

The remedies which may be suggested for the present scarcity and high prices of bituminous coal relate to its production, transportation and distribution. The most effective remedies deal with the improvement in the distribution of the present facilities for transportation. Many operators asserted at the hearings before the commission that such remedies were the only ones necessary. On the other hand, the representatives of the railroads, municipal public utilities and industrial consumers, while admitting the importance of such improvement, pointed out that there were other conditions which need remedy.

1. Improvement of Transportation Facilities—At the hearings of the commission the fact was brought out that measures are being taken by the Interstate Commerce Commission and by the Council of National Defense which it is hoped will relieve transportation conditions. For railroad carriers, additional regulations are being considered covering the distribution of open-top cars to the coal industry, the expediting of the movement of cars loaded with coal, and the return of the empty cars to mines, prevention of the abuse by speculators of reconsignment and demurrage privileges, and the providing, where necessary, of additional equipment for use in transporting coal, both cars and locomotives, either by acquiring

new equipment, or through possible changes in other lines of traffic, such as dispensing with passenger trains which are not absolutely necessary and thereby releasing more locomotives for freight service.

For water carriers, remedies should be sought along the lines of requiring boats, suitable for coal carrying on the Great Lakes, to transport coal westward, instead of going back in ballast for grain and ore cargoes, and in adjusting the rail conditions so that there will be sufficient transportation facilities to carry the coal from the western Pennsylvania, eastern Ohio and West Virginia mines to the loading docks on Lake Erie, for prompt loading of the boats.

The limited period that the lakes are open to navigation makes it necessary that the carrying capacity of the boats be kept in continuous use. Early remedial action is necessary because every week of the navigation season is of tremendous importance in preventing shortage of coal in the Northwest next winter.

The principal remedy suggested for conditions in the coastwise water transportation of coal, apart from the building of more boats, is the exemption from military use of tugs and barges absolutely necessary to transport not only the coal, but also the timber needed for mine use.

SHOULD NOT CONSCRIPT THE MINE WORKER

2. Improvement of Labor Conditions—It was developed at the hearings on the part of the operators that they anticipated that labor conditions in 1917 would permit, if mining operations could be kept steady by a continuous supply of cars, the production of as much coal as that mined in 1916, and some of them stated that with their present force they could mine an excess of from 15 to 20 per cent. over their output in 1916. If this statement is accurate, the operators in the coming year will supply more bituminous coal than in 1916. The recent increases in wages and the better housing conditions, which are being provided for miners, will, many operators believe, not only hold their present force, but to the extent to which they would attract additional labor would bring about an increased output.

It will probably be found necessary to exempt miners from the conscription law, so long as they remain at work in the mines. The experience of Great Britain in this matter should be heeded, and the disastrous results which came from the enlistment of miners avoided. Everything should be done to encourage men employed in the coal mines to stay on their jobs and to realize that it is their duty, as patriotic citizens, not to leave the mine even to enlist, but to see that they are serving their country best by remaining at their labor to produce the commodity which is absolutely essential to sustain all the forces which must be quickened and employed in the prosecution of the war; that their post of honor is at the mine and not on the firing line.

3. Establishment of Increased Storage Facilities—It is highly desirable that additional storage facilities be provided at points of consumption. Municipal and other public and semipublic utilities and institutions should safeguard themselves not only against being shut down, but also against being forced by their urgent necessities to buy coal at exorbitant prices. The railroads, which consume about one-third of the bituminous coal mined, should increase their storage facilities and avoid the necessity of holding cars loaded with coal for railroad use.

4. Regulations by Governmental Authority for the Distribution of Coal—Under war-time conditions it may become the duty of the Government of the United States to take steps similar to those found necessary by the belligerent European countries, and not only regulate the distribution of the coal from the mouth of the mine to the ultimate consumer by allotting the quantity of the product which the different classes of consumers shall be allowed to purchase, but also to establish the prices to be paid by different classes of customers.

Any prices thus established would probably have to be based on actual costs, with an allowance for a reasonable return on actual investment. In other words, the price of bituminous coal, which is a great public necessity, should be fixed according to the same general principle which has been established in the conduct of public utilities. At a time like the present, excessive profits should not be permitted to be extorted from the public by producers and distributors of any prime necessity of life.

⁂

The illustration on the back cover, but in colors, a shield with an excerpt from the President's speech, can be obtained free on application to the Link-Belt Co., Chicago, Ill. It is prepared as a hanger for suspending in offices and factories.

Noisy Hoisting Engines

Of all slide-valve engines, none are so noisy as the hoisting engines used in coal mines. But it is not fair to condemn an engine simply because it is noisy.

All slide-valve engines are noisy when steam is shut off suddenly while the engine is in rapid motion. The engine instantly becomes an air pump and draws air through the valves with an infernal din that is shocking to the engineer and everybody else.

If the engine has piston valves, a partial vacuum is produced behind the piston that aids in checking the motion of the engine. Few piston valves are used on hoisting engines, and therefore little noise is produced. Practically all hoisting engines employ slide valves, these being safer against an influx of water, and being free to lift, admit air freely, with the inevitable noise.

Rapid hoisting is accomplished by working at top speed to as near the landing place as safety will permit and then shutting off the steam for a moment to check the momentum of the cage. At this point the noise is violent. Steam is admitted again to take the cage up slowly to the landing, with perhaps some more noise, according to the method of handling, or the steam may be shut off by cutting back the reverse lever to midgear, or into the reverse, at the discretion of the engineer.

Engineers handle their machines in different ways to gain the same results. But this is not the last word in hoisting coal. Handling may be done, and perhaps is, by some of the more expert engineers in the way here suggested. The cage may be checked in speed about as quickly if steam is not shut off for the moment entirely, but nearly so.

If the reverse is used, the speed of the cage can be snubbed instantly; but this involves shutting off steam entirely by the slide valves. In this case the throttle should be slightly open, to admit steam at slight pressure and to avoid causing a vacuum behind the piston, with the resulting clatter of the valves.

It is always presumptuous to criticize an existing method without offering a substitute: therefore, I would recommend that the throttle lever close against an adjustable light spring to serve as a temporary stop, leaving the valve slightly open, as before.

When it is necessary to shut steam off entirely a further push of the lever will close the valve. The preponderance of pressure on the valve will hold it shut against the spring.

The chattering noise of the valves can only be cured by keeping live steam against the piston from the beginning to the end of every hoist, and every engineer can improvise a method for himself. It goes without mention that the continuous rumble of the valves causes wear of their faces and ultimate leakage.

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Success in the Metallurgical Use of Powdered Coal requires (1) that the coal have a high volatile content and a low percentage of ash; (2) that, after pulverizing, the moisture in the fuel shall not exceed 0.75 per cent.; (3) that the fuel shall be pulverized so that at least 95 per cent. will pass through a 100-mesh sieve and over 83 per cent. through a 200-mesh sieve; (4) that the delivery of the coal to the furnace shall be uniformly controlled regardless of the quantity required; (5) that the fuel be delivered to the furnace in a thoroughly atomized state and that combustion be completed while the coal is in suspension; (6) that in the application of the fuel to the furnace, the personal equation be eliminated as far as possible.—C. J. Gadd, Journal of the Franklin Institute, September, 1916.

Some Theories on Mine Subsidence

By J. F. Kellock Brown*

SYNOPSIS—An analysis of the manner in which the mine roof acts after part of the support is withdrawn. The author lays stress on the effects of flux in the softer measures and points out how the plastic elements in roof, ribs and floor modify the action of the more elastic elements.

The exact relationship between mining operations and the surface effects they produce is an interesting study which has, as yet, barely advanced beyond the speculative stage. Little is known as to how rock strata act when the underlying support is withdrawn, and the experiments that have been made are few and far between.

Further, these experiments were almost all arranged to meet the particular situation on some one property, and so in a broad sense they are not of service in the elucidation of general laws governing the subsidence of strata. As time passes and coal areas become worked out and abandoned, the attempt is made to operate the coals that lie above those which have been exploited. As these are often thinner than those below them, the margins of profit are lower and the need for their more perfect conservation is therefore apparent.

Owing to the ill-regulated work in the lower beds, the conditions in the upper measures are quite unfavorable to operation, and the importance of a study of the destruction wrought on the overburden by the removal of coal is forcibly brought before the management. Had the mining officials studied the matter before the work of the mine began, they might have been able to prevent much economic loss, such as the destruction of coal seams above or below the beds worked and damage to surface buildings, railroads and canals.

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Subsidence is therefore one of the leading conservation problems of today. We shall understand it better a few years hence, but the knowledge, in many cases, will then be too late, for the damage will already be done. It is necessary to realize now that the greatest ultimate economy may quite possibly not be obtained if the working of each seam is schemed along lines which will make the extraction of that seam most economical. The system of mining employed in the extraction of a lower coal may be such that the bed or beds above cannot be mined at a profit.

But before we can accomplish such results, we must determine the conditions governing the subsidence of strata. We shall discover on inquiry that the action of the roof varies with different methods of operation. The coal beds under Newstead Abbey in England at a depth of 100 ft. were completely extracted, and the ground sank two feet. Though at one time one side of the abbey was 10 in. lower than the other, the process of subsidence was so general and regular that not a single stone in the exquisite tracery of the windows fell out of place. We also know that a 60-ft. seam of coal has been extracted under a railway line without traffic being at any time suspended. But the work of mining has not always been performed in such a successful way.

Before the extraction of coal the strata are in a state of equilibrium, or balance. The unit areas of each bed are held in relative position, as they are surrounded laterally by other units of the same bed while surmounted and supported by units of other beds.

Perhaps a simple illustration may be pardoned. On a pat of butter, weights of iron may be superposed. When the limit of resistance is reached, the butter flattens out and flows from under the load. Had the butter been in a lidless box, however, it would have been afforded lateral

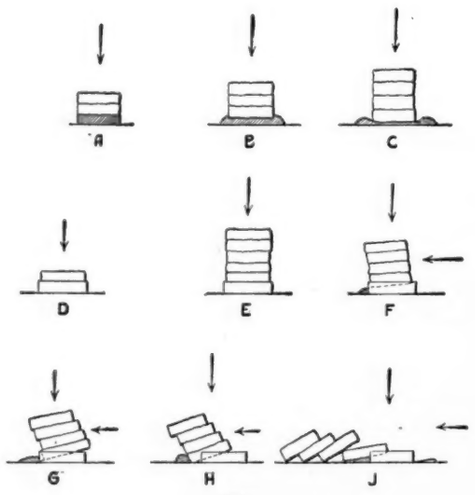


FIG. 1

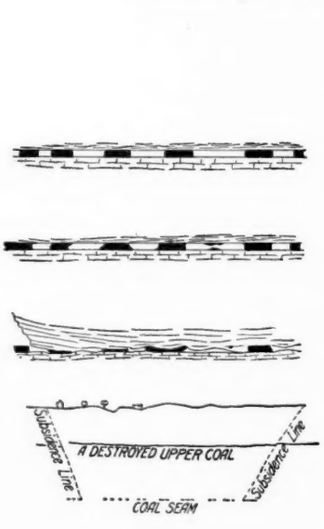


FIG. 2

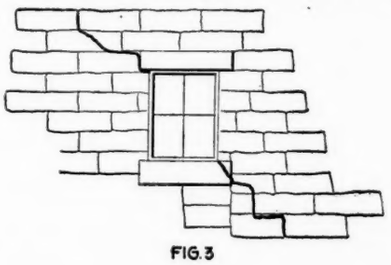


FIG. 3

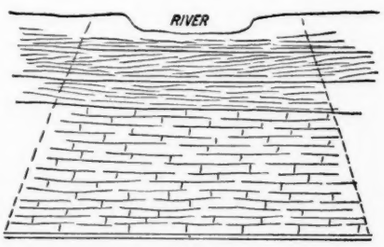


FIG. 4

SKETCHES SHOWING ACTION OF SUBSIDENCE OF MINE ROOF AND THE BUILDINGS IT SUPPORTS

Fig. 1 shows at A, B and C how increasing the weight causes the soft measure to bulge and exude under the load. At D, E, F, G, H and J are shown the progressive demolition when a heavy weight rests on a soft foundation which is prevented from spreading in all directions but one. Fig. 2 illustrates how pillars are flattened out by the superincumbent load and creep takes place. Fig. 3 shows the course of a subsidence crack in a house at Cambuslang, Scotland, the illustration being taken from an old notebook of 1910. Fig. 4 suggests the protection afforded to workings under a river by a heavy coating of alluvial matter so plastic as not to crack even though completely undermined.

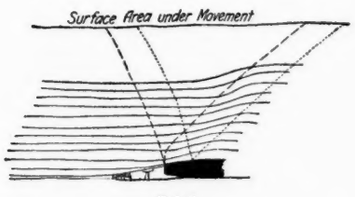


FIG.5

FIG.6

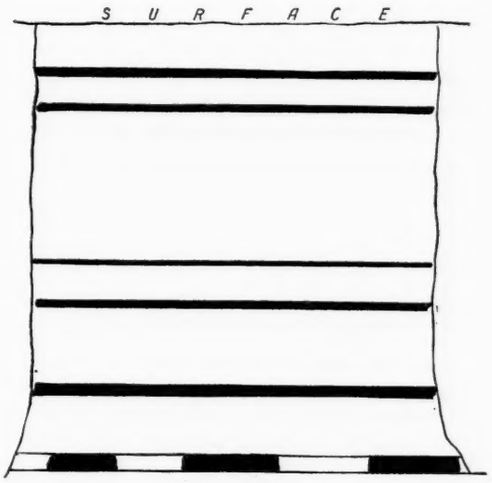


FIG.7

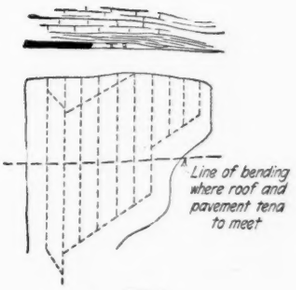


FIG.8

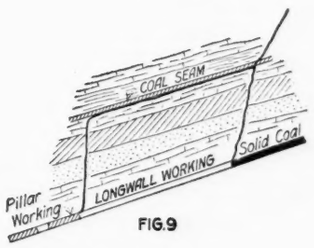


FIG.9

WHAT HAPPENS WHEN THE COAL IS REMOVED AND FRACTURE OF THE ROOF TAKES PLACE

Fig. 5 shows the roof of a longwall working bending over the coal face. Fig. 6 shows the fractures in a line of undermined houses. Fig. 7 shows a mine roof supported by adequate pillars, an expensive method of operation unless second mining is purposed. Fig. 8 shows a longwall working and the line of support where roof and pavement meet and how the side roads are always broken off at points beyond the line of support. Fig. 9 shows a longwall working which refused to break according to rule and bend down over the face of coal as planned. The probabilities are that the break followed along an upper seam as shown and caused the roof to close solidly as fast as the longwall was opened up

support and would have been able to have resisted the pressure of the iron weights. Were one of the sides removed, the opportunity for flow would in a degree be restored, and the weights would fall in the direction in which the flow took place.

This action, illustrated in the accompanying cut, Fig. 1, shows how the soft beds such as clay and coal act under pressure. The sedimentary structures of the earth always contain plastic bodies which modify considerably the action of those which are elastic.

Coal is an extremely friable material, and it would in many cases have been disintegrated by the great weight of the many strata resting upon it had it not been protected by its continuity and by the support afforded it by adjacent measures. In some of the deeper coal fields the lateral and other support has been insufficient to protect the coal, and it is found to be tender as a result.

In some instances the friability results not so much from the vertical pressure of superincumbent measures, as from a general wave-like crumpling of the strata, which formed anticlines and synclines. These actions may not have been enough to cause faulting, but they have left evidence of their presence in the weakness of the coal under pressure.

The illustration just chosen overlooks an important difference in the conditions confronting us in the discussion of roof movements. The roof extends over areas so large that the various strata adhere to one another, and the tilting over toward the area undermined and toward which flow takes place is resisted by tensions in the rock. For this reason, the strain and the fracture line extend over the supported area.

The breaking of the rock is not along a straight line. The fracture does not resemble a cut with a knife, but it is stepped outward from the mined area over the support, each unit of stratification holding together and causing the break in the rock above to be a little in advance of the break in the bed below.

It is permissible to term these "step fractures," even though when seen they would not so appeal to the observer so small are the steps they would exhibit. Under normal conditions the ultimate outcome is a line of fracture which slopes away from the point of coal extraction and appears on the surface far in advance of the known position of the working face as vertically projected on the surface.

In some countries this advance is known as the "draw" of the strata. Other observers, viewing the extension of the disturbance beyond the limits of excavation as having a somewhat different origin to that described, term the slope of the fracture, "the angle of repose of the strata"; the expression "draw" is to be preferred, for it has reference to a theory more in accordance with the actual facts.

Naturally, the extent of the draw varies much with the type of rock. Moreover, in some cases the fracture may be immediate, and in other cases it may be delayed for some years. The coal thickness has apparently little to do with the roof action. It does not appear to be true that the extraction of a 3-ft. bed will cause a subsidence half that produced by the removal of a 6-ft. bed. In fact, under some conditions, the collapse of the roof over a 3-ft. bed will do the greater damage. Moreover, when coal at a great depth is withdrawn, it may create as large a subsidence at the surface as a bed of the same thickness at half the depth.

It is necessary that data be collected at once regarding this subject; partly because it is not well that the available experience be lost, and secondly, because the information is needed now before the damage is done. The subject will probably require years of study and research, and it should not be delayed.

It will be necessary to have not only an account of the method of operation and the depth of the strata, but an exact section of the measures from the surface to the coal, with their thickness and inclination. The effect of

water on the disturbed strata should be studied. Water may act as an agent to wash away supporting material under little or no pressure, but its force becomes tremendous if the head under which it works is the full height from the seam to the surface.

We should ascertain what causes one measure to break abruptly while another forms merely a wave that can be actually seen passing across the ground. These surface effects must be systematically recorded. Accurate surveys of the land are needed showing all the rivers, roads, fields, houses, drainage systems and streams. At least twice a year a series of levels should be taken at points arranged methodically.

Such inquiries will enable us to predict just how subsidence will occur and how much of it there will be when coal is removed in any particular cross-section of strata, at any specified depth and with any given inclination of the measures. When the action of subsidence can thus be predicted, we shall be able to arrange our work so as to get the maximum return with the minimum damage to surface works.

The break between those two upper seams might become extended downward to the lower seam, and, when workings approached that break, there may well be a sudden "bump" of coal.

Creep often causes subsidence, and as it is slow in action, it may surprise the surface holders who have felt assured that as mining has long ceased and pillars have been left no harm can accrue.

The problems of the roof action reach their simplest form in longwall, though even there some difficulties present themselves. In room-and-pillar workings the problems are more numerous and difficult to solve, for the operation is piecemeal and discontinuous.

When a longwall section is opened out in the solid coal a stretch of roof is laid bare, and thus for a while stands in place, the only exception being falls of minor importance from the underside of the roof mass. But as the face advances the stretch of roof becomes so great that it cannot be held up and it finally fractures, causing what is known as the "first break." This materially relieves the pressure on the coal face. The break is often

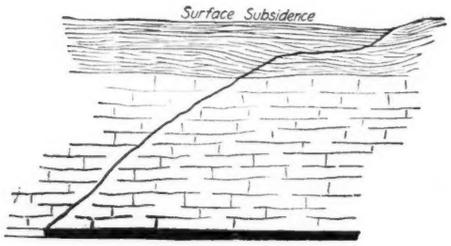


FIG.10

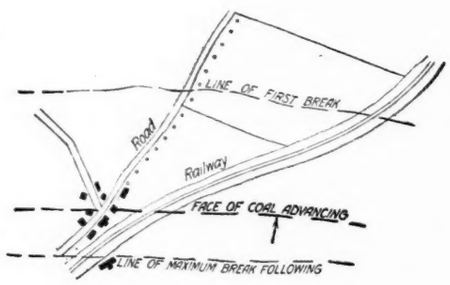


FIG.11

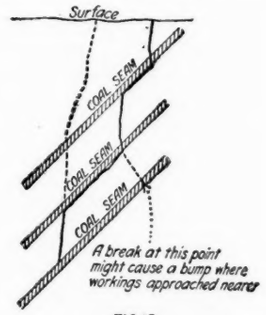


FIG.12

SOME OF THE KNOTTY PROBLEMS IN THE SUBSIDENCE OVER MINE WORKINGS

Fig. 10 explains why the effects of subsidence are often extended a long distance where soft measures exist above the coal. Where water is met with the subsidence effects may be extended even more distantly from the underground operations. Fig. 11 shows the action of the roof in a longwall working. Fig. 12 attempts an explanation of the "bump." The coal is seamed and ready to fall down the slope before mining reaches the point of break

It appears reasonable to suppose that the draw of the strata may be indefinitely extended in a horizontal direction where there are strata of material like sand or clay, which can flow under pressure and thus fill any vacancy caused by the breaking of immediately underlying rocks.

When such materials occur the support is removed from a larger area than that actually mined. What wonder then that the area which collapses is larger than could be expected where the mining is done in more solid measures. The subsidence resulting from soft strata may be much extended and accentuated when circulating waters have opportunity to operate on them.

When the strata are inclined the conditions are of course profoundly modified. The line of break tends to come nearer to the line of inclination of the coal and to extend back over the upper part of the unworked mineral just as is the case where soft beds exist. With a high inclination the line of break may be in the coal bed itself or close to it.

This may be in part the cause of the much debated "bumps" or "slips." The coal pillar not only tends by its own weight to fall down the slope of the workings, but it is also dragged in the same direction by the sagging of the roof in the workings or by its movement in case of a break.

The illustration (Fig. 12) suggests what might happen. The rock has broken with a pronounced "draw," the break being heavily stepped at two upper coal seams. extremely violent and it may result in the closing of the whole section. I am of the opinion that this is the only real fracture in longwall. Even this break may not reach the surface, but it starts the collapse which eventually reaches clear to the grass roots.

After this action of the roof it is quite generally thought that the strata do not break any more. They bend over the edge of the coal and rest on the floor of the mine at a point approximately 200 ft. from the face of the coal. Elsewhere there is no great pressure over the excavated area except at a point roughly 200 ft. farther back from the face, where there may be additional pressure to that normally to be sustained but no pressure like that existing at the point 200 ft. from the face.

With such a system of working the maximum subsidence is obtained, for the rock is not in any way broken. It is just simply lowered onto a new bed. The system does not reduce subsidence, but it regulates it so long as the rate of advance is kept regular. Under this system it would be possible to extract all the coal even under bridges and important buildings. When once the wave of subsidence passed there would be little or no further trouble.

Houses under which the coal is being extracted by this system pass like a ship over the edge of the wave. They do not break apart overnight as might be feared, and few inconveniences are suffered by those living in them.

In a few cases the principles of longwall have been carried so far that even the coal at the shaft bottom is extracted. In former days it was believed essential to leave a coal pillar of diameter equal to one-third or one-half the depth of the shaft, in fact it was often made more. The possible amount of draw was estimated based on an imaginary angle to which it was thought the break would conform and which experience appeared to suggest. The purpose was to prevent the draw from reaching the shaft and pulling it out of shape and otherwise injuring it.

Of course, removing the coal around the shaft did cause some trouble, but after the measures had settled the difficulty was completely at an end. In this way the shaft was but little displaced laterally and the plan has been quite generally recommended for deep shafts, but why for deep shafts only it is hard to comprehend.

After the first break in longwall there is little evidence of the extended movement and immense pressure involved. Of course, a quiet and continuous crush is quite evident near the coal face, but there are no abnormal phenomena like a sudden closing of all the roads in a straight line.

The roof and floor meet together at a certain point, and it is an axiom in good longwall management that side roads should not be made any longer than the length thus indicated, which varies for every mine. The purpose is to avoid a second roof brushing except in the main roads. This explains why levels and slopes off these main gangways are turned at distances of 200 or 300 ft.

Room-and-Pillar System Not So Simple

Where a mine is worked on the room-and pillar system—any system in fact where the extraction of the coal is divided into two separate operations which we term first and second mining—there is an entirely different type of surface subsidence. Pillar workings, where only small pillars are left for the support of the roof which the operator never intends to remove, may nevertheless not show surface subsidence for years. Ultimately, however, a creep will take place and the disturbance of the surface will be extensive. Where more than half the coal is left in, this subsidence may not occur; but the operator will then be justly chargeable with having worked only half his mine.

Sometimes the first mining of a colliery is extremely conservative, and only about 20 per cent. of the coal is removed until the operations have extended to the boundaries of the territory. Second mining is then started from the boundary back toward the opening. In such cases the conditions of subsidence closely resemble those obtained in the operation by longwall.

While driving up rooms fractures may form having a draw in one direction. This may not reach to the surface. The lines by which the rooms advance into the solid coal are almost at right angles to those along which the pillars are withdrawn. This angle is reflected in the subsidence, and the result is a series of hollows on the surface, which may become marshy.

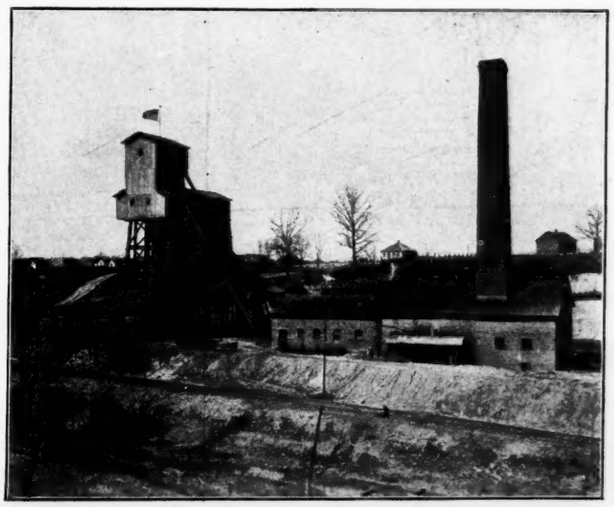
Some observers contend that subsidence is a filling-in process and hold that, since broken rock occupies more space than it did when unbroken, a point must inevitably be reached when the resistance of the material which has fallen into the hollow space is equal to the pressure of the unbroken measures resting upon it. Then subsidence ceases. This theory assumes that the strata fall in layers. Those of us who have observed longwall workings in the waste spaces where roof and floor nearly touch and where the broken material is relatively small in amount will hardly be able to admit any such theory, for such workings at least.

Where, however, as in pillar work, the fracture lines are often not straight, but stepped, it is quite reasonable to suppose that the rock will not and does not come down in any such unbroken condition. It is quite possible that in that case it may arch and thus become self-supporting. But this arching may be later disturbed and as a result more rapid and alarming subsidence may occur, doing the more damage because it has been delayed and because its action is so irregular.

Subsidence Hard To Trace in the Country

The evidences of surface subsidence are most obscure in the country and most obvious in towns. In a wooded and uncultivated country the ground may subside considerably, with no visible signs. In a cultivated country the farmer may be aware that this or that field is more difficult to drain than before, but he may never connect his troubles with the working of the coal beneath, as the change in level does not produce visible effects, though a series of levels taken every six months would show that the whole farm had gone down a foot or two. In towns where buildings have been erected and where drainage systems have been installed evidences of subsidence are more numerous.

The effect of a clay cover over the rock below is quite important. If the clay is easily washed away, the cracks in it may enable the water to circulate below the surface and remove large quantities of alluvium into which much surface material may fall later, with sudden and unexpected damage. But such clay beds may be quite helpful where coal is being worked under rivers and lakes at only moderate depth. The clay quite frequently will fill up the cracks in the strata and make them impervious to water. Where there are great depths of such surface material the effects of subsidence may not be at all visible on the surface.



NO. 1 PLANT OF THE WEST CLINTON COAL CO., CLINTON, VERMILION COUNTY, INDIANA

War Sidelights

Under this heading in Coal Age each week we hope to publish items relating to war measures as they affect the coal-mining industry. We earnestly invite all our readers to send us interesting notes covering happenings which bear on the war, either in a military or an industrial way.—Editor.

The editor and the assistant editor of the *Excavating Engineer,* of South Milwaukee, Wis., having been called to the colors, the publication has been suspended temporarily.

A flag-raising was held at the Kelso mines, near Johnstown, Penn., on May 21. An interesting address was made by Mayor Franke, of Johnstown. Music was furnished by the miners' band.

The United Coal Corporation, of Pittsburgh, Penn., has subscribed for $100,000 of the Liberty Bonds. It will also carry subscriptions for those employees who desire to subscribe, allowing them to pay in instalments running over several months.

Otto Klingenfuss, of Belleville, Ill., who recently sold his interest in the Kolb Coal Co. for $70,000 cash, invested $30,000 of the money in Liberty Loan bonds, as an example to German-Americans engaged in the coal-mining business in that section.

Members of the Glen Lyon local of the United Mine Workers, at a meeting held in Nanticoke, Penn., on May 25, voted to forego the pleasures of all legal and church holidays in the interest of insuring a maximum production at the mines. During the war the Glen Lyon mine workers will continue at work on all holidays.

Impressive ceremonies marked the flag-raising exercises held by the office employees of the Lehigh Valley Coal Co. at the main office building at Wilkes-Barre, Penn., on May 24. Company E, 3rd Pennsylvania Field Artillery, attended the exercises in uniform, with a full complement of battery equipment, including horses, guns and caissons.

Employees of the Boston colliery of the Delaware & Hudson Coal Co., at Larksville, Penn., held a flag-raising recently, the flag having been purchased by the employees. The honor of raising "Old Glory" was given to the three oldest employees—John Leckie, Sylvester Alden and Wheeler Keating, who have been with the company over 40 years.

The Lehigh Coal and Navigation Co., of Lansford, Penn., has announced that it will purchase Liberty Loan bonds for its employees and allow the men to obtain them on the instalment plan. For a $50 bond an amount of $2.50 will be deducted every pay day, and twice that amount for a $100 bond. The company operates collieries in the Hazleton, Cranberry, Harwood and Crystal Ridge districts.

FLAG-RAISING AT BOSTON COLLIERY OF DELAWARE & HUDSON COAL CO., LARKSVILLE, PENN.

Flag-raising exercises were recently conducted at the Coal Brook colliery of the Delaware & Hudson Co., Carbondale, Penn. The employees of the breaker and the mines purchased a large flag 15 x 25 ft. Superintendent Charles G. Constantine, who was a captain in the 13th Pennsylvania Infantry during the Spanish-American War, was chairman. The students of the schools sang patriotic airs and Morrell's band furnished music.

Maxwell S. Barker, of the Federal Coal Co., Louisville, Ky., recently stated that the only remedy for the present price of coal is Government control. He said that the Louisville & Nashville R.R. has 11,000 to 12,000 coal cars of its own on lines north of the Ohio River which it has been unable to get back, being compelled to use the cars of other lines. Mr. Barker stated that he did not believe the predicted price of $20 for a ton of bituminous coal at retail would be realized this winter, but that he felt quite sure prices would be much advanced unless the Government interferes.

The Superior Coal Co., of Gillespie, Ill., recently got out the following notice, which was signed by John P. Reese, vice president and general manager:

Gentlemen—
Do You Want the Kaiser to Win?
Do You Want the Miners' Union To Get "in Bad"?
Do You Want the Mines Operated Under Martial Law?
Do You Want To Be a "Slacker"?
Do You Want To Lose Your Membership in the Union?
Do You Want To Lose Your Job?

If so, continue to agitate trouble, claim the scales are out of order, claim the checkweighman, committeemen and officers have all sold out to the company and are giving you the worst of it. Lay off after pay day, and on the day of every funeral, quit early and claim you are sick. Don't do an honest day's work for a big day's pay and see that your fellowman does likewise.

Do You Want To Whip the Kaiser?
Do You Want To Be a Good Citizen of the U. S. A.?
Do You Want To Help the Miners' Union?
Do You Want To Help Your Family?
Do You Want To Keep Your Job?
Do You Want To Continue To Enjoy Freedom?
Do You Want To Do Your Duty as a Loyal Citizen—
As a Good Union Man—As a Good Neighbor—As a
Loyal Employee—As a Bread Winner for Your Family?

If so, quit kicking and start boosting—quit loafing and work at least 8 hours a day, 6 days a week—trust your officers and do at least your legal and contract duties.

Employees at the forty collieries of the Lehigh Valley Coal Co., in the anthracite region, have been asked to work the mines on Memorial Day. Notices to that effect, which have been posted at the mines, read as follows:

To Our Employees—It has ordinarily been the custom to suspend operations on Memorial Day, but in view of the unusual conditions which now prevail, a suspension does not seem warranted this year. The day would be much more fittingly observed by producing coal which the industries and the individual so greatly need, and by so doing respond to the appeal of the President of the United States made especially to the mine workers, to do their part in supplying the country's requirements. The collieries of this company, therefore, will operate on Wednesday, May 30, if the employees will turn out for work in sufficient numbers. Will you manifest your patriotism by responding for work as usual?

Measures for the protection of miners who enlist in the army and navy will be considered at a special meeting of the Executive Board of the Illinois District, United Mine Workers, to be held soon, with particular reference to their insurance status. A proposal will be made to pay $250 insurance in case of the death of a miner in actual service. It is expected that suspension of the dues of enlisted men will also be authorized. Purchase of war bonds will be discussed, and it is probable that a substantial sum will be voted for this purpose and that the bonds will be held as a reserve fund.

RECENT LEGAL DECISIONS

Foreman's Negligence Imputed to Virginia Coal Operator—Under the mine laws of Virginia, a coal operator's legal duty to provide a reasonably safe place to work for his employees is a nondelegable obligation. So, negligent failure of a mine boss to make proper inspection of a roof in which a squeeze had taken place, resulting in fatal injury to a miner through a fall of rock, was negligence of the operator, raising liability for the accident. (United States Circuit Court of Appeals, Fourth Circuit; Repass vs. Big. Vein Pocahontas Co.; 238 Federal Reporter, 332.)

Violation of Law as Cause of Injury—Where a miner riding on a loaded car while it was being hoisted on a slope apprehended injury through the engineer's negligent handling of the hoisting engine, and jumped from the car, sustaining fatal injuries, the operator could not be held liable for the accident on the theory that it was caused by a violation of the Pennsylvania Anthracite Mine Law, which forbids use of loaded cars as a means of conveying men, although the operator failed to provide any other conveyance for decedent. (Pennsylvania Supreme Court, Maguire vs. Philadelphia & Reading Coal and Iron Co., 99 Atlantic Reporter, 166.)

Accident Caused by Curtain in Entry—Although a mine employee assumes all risks of injury actually known to him and voluntarily encountered, and also all risks that could have been known by him in the exercise of such care for his own safety as an ordinarily prudent man would have exercised in the same circumstances, in an action against a coal operator for injury to a mine driver caused by his tripping in an unlighted mine entry over part of a curtain which was permitted to remain hanging so low that several inches of the curtain lay folded on the floor, it was open to the jury to find that plaintiff did not assume the risk of the accident. (Colorado Supreme Court, El Paso County Land and Fuel Co. vs. Howell, 161 Pacific Reporter, 293.)

Accident at Tipple—It is not a negligent practice to move cars down an incline by gravity and at a speed of six miles an hour for loading at a tipple, as affecting rights of employees working about the track at the tipple. An employee charged with the duty of moving loaded cars away from a tipple by means of a pinch-bar, and to spot empty cars as they were sent down the incline to him was legally bound to keep a reasonably careful lookout for approaching empties, and his administrator is not entitled to recover damages for his death caused by being crushed between two cars in a collision which he could have readily foreseen. (Kentucky Court of Appeals, Heady's Administrator vs. West Kentucky Coal Co., 190 Southwestern Reporter, 475.)

Rights Under Coal Land Conveyance—Defendant owned land and sold it to plaintiff on a basis of its value for coal-mining purposes. Neither party knew until after the conveyance that the coal had been removed by a lessee of adjacent lands. Plaintiff sued for damages on the theory that defendant failed to deliver the coal in place contemplated by the sale. Upholding plaintiff's right to recover, the Pennsylvania Supreme Court holds that defendant became liable for the value of the coal not delivered as compared with the value of the entire tract of land conveyed; and that plaintiff was also entitled to an allowance on account of injury to the buildings and springs on the land caused by the removal of the coal. (Clark vs. Steele, 99 Atlantic Reporter, 1001.)

Cancellation of Coal Sales Contract—Where a mine owner sues for damages for breach of defendant's contract to take the output of a mine, the former is not entitled to recover both profits lost by defendant's breach of the contract and reimbursement for expenditures made in preparing the mine to fill the contract, since a recovery of profits would necessarily take into account the mining expenses. Under a contract to buy the output of a mine for a stated period, subject to the coal proving "entirely satisfactory," the buyer was entitled to rescind the agreement on being unable to retail the coal because of its quality; it appearing that the contract was made in contemplation of the fact that the coal was intended for resale. (Alabama Supreme Court, Jones vs. Lanier, 73 Southern Reporter, 535.)

Mining Men Convene in Kentucky

EDITORIAL CORRESPONDENCE

SYNOPSIS—The Kentucky Mining Institute met at Lexington, Ky., May 18 and 19, with fair attendance and interesting papers.

The Kentucky Mining Institute's meeting at Lexington, Ky., May 18 and 19, was favored by a larger attendance than usual, but there were so many first-aid men in the audiences that it was hard to tell just to what extent the attendance represented the institute and just how many were present for the benefit of the papers and discussions. It was gratifying, at least, that in numbers the assemblage was larger than usual.

On all occasions J. E. Butler, the general manager of the Stearns Coal and Lumber Co., was chairman, a position he so well knows how to fill. The address of welcome was made by the Hon. James Rogers, the mayor of Lexington, who is far more eloquent than burgesses usually are. His infirmity, however, compelled him to sit while making his address, putting him at a considerable disadvantage.

The morning session was short, the sole event being an address by L. L. Holmes, mine inspector for the Consolidation Coal Co., at Jenkins, Ky. Mr. Holmes stated in the discussion that the Consolidation Coal Co. did not allow any shots to be loaded in the absence of the shotfirer. Joseph W. Reed, the secretary-treasurer of the institute, now with the Consolidation Coal Co., and formerly in the state inspection service, said that the backbone of safety was with the local committees. He found that the larger corporational committee could not cover adequately the varying conditions in the various fields and so meet the actual exigencies of the situation.

In the afternoon session J. Roland Brown, engineer of the Ohio Brass Co., read an excellent paper on "High-Tension Current in Mines," and Clayton T. Rogers, of the Westinghouse Electric and Manufacturing Co., an article of much merit on "Some Considerations of the Application of Alternating Current in Coal-Mining Work." Both were exhibits of the admirable service which manufacturing companies can render to the industry when, as the speakers did, they choose to subordinate their business interests to the advantage of their audiences.

The papers were discussed largely by those who were opposed to high-potential alternating current underground, and who felt that no matter how safe it might be with equipment properly grounded and kept in perfect condition it was dangerous if not properly taken care of.

The laws are now somewhat generally inadequate, and the inspectional forces as a whole are really not sufficiently posted in any state to exercise proper supervision of such recent innovations.

The question of what constitutes an adequate ground was much discussed. Some operators seem to have thought it enough to ground to an unbonded track or an empty water line or to sink a hole a few inches into a dry piece of bottom. The State of Kentucky is proposing legislation which will remove the difficulties under which the inspectors are operating and it was for further enlightenment that the papers read were invited.

Charles W. Strickland, chief engineer of the West Kentucky Coal Co., at Sturgis, Ky., presented a "Discussion of Kemble's 'Choosing Employees by Test,'" and C. A. Sine, an inspector of the Associated Companies, read an address on Workmen's Compensation Insurance, showing how the rating system had supplied the funds by which safety work can be inaugurated and maintained. Safety to a certain extent remained an impossible ideal till workmen's compensation insurance subsidized the pursuit of safety.

At the close of this meeting the ladies of the University, who had intended to entertain the wives of visiting members, in the entire absence of such wives with all Kentucky generosity entertained the visiting husbands.

In the evening a smoker was given to the visiting members by the Chamber of Commerce. Unfortunately, the event had to compete with the State Defence Committee's meeting, which took place at the same time in the ballroom. This latter meeting was addressed by Governor Stanley.

The only feature provided for the smoker was an address by R. Dawson Hall on "Bituminous Coal Industry During the War." His paper suggested that the conscription officer would probably refuse when making his selective draft to exempt all persons working in the coal mines. It is clear that something is going to prevent the mines from putting out a maximum output. It may be a shortage of demand or a shortage of cars. If the transportation difficulties are solved, there will probably be a shortage of demand. These cars or this demand should be divided up among the operators—will be, in fact, in any event. Why not then consolidate and arrange to handle the limited facilities or the limited demand at a few mines with an adequate, but not excessive, force? The proposition was one promising larger returns at a given price for coal than could be afforded by a number of small concerns each struggling to get men, cars or orders and to keep running. There is a need for some such conservation, but there is no reason why any coal producer should suffer from its being put into operation.

The presiding officer, Mr. Butler, threw an extremely illuminating light on the present situation as some of the older and larger companies are experiencing it. He said that his corporation, the Stearns Coal and Lumber Co., had 47 per cent. of its production under long-time contracts and that the company had given three wage increases during the duration of the contracts without any concession from those with whom contracts were made.

Professor Norwood, in discussing the address, declared that the "wagon mine" appeared to have certain undoubted advantages under some conditions. For instance, around Owensboro small wagon mines supplied the town with coal. He did not believe their service uneconomical or undesirable. They were operated only in the winter and so did not keep the farmers from doing their full duty by their farms in the months suited for such work.

In this Mr. Hall acquiesced, saying that for small hauls the railroad service was not well fitted. Not only was the work uneconomical, but the equipment thus kept

busy was not available for work where its use was indispensable. The small country bank that was operated solely to supply local needs relieved the railroads and did not deprive the farms of the labor of men or stock. It also tended to stabilize the coal industry supplying coal in the winter when business was briskest and using men for that purpose who in the milder months of the year usually worked on the farms.

It was the intention only to condemn those mines which increased the work of the railroad, cumbered its side tracks and conscripted its cars and also stopped the work of the farm. Its success simply increased inefficiency, for the coal was mined at a disadvantage, hauled twice—once by wagon and once by railroad—and was unloaded into the railroad cars at a further disadvantage; withal, it reached the market in an inferior condition.

Inefficient Operation in the Wagon Mines

The president, J. E. Butler, said that he could indorse much of what was said about wagon mines. In his section there were many surface seams about 18 in. thick which under ordinary conditions no one would work. The present prices had made the mining of these feasible and men had been employed at high wages to mine them. No man could succeed in putting out in them more than 2 tons a day. By persistence and offering high wage rates men had been inveigled into these country banks from mines where a good tonnage could be secured at less labor. This was not promoting efficiency; it was hampering efficient mines for the purpose of working mines which at the present time should not be worked.

In reference to the closing paragraphs of the address it was pointed out that the terms on which the Liberty Bond was issued were not such that the mine worker could readily purchase it unless the operator or some bank was willing to extend the time of payment beyond the period granted by the Federal Government. Charles Wells, a general labor leader, who chanced to be present said, what is undoubtedly true, that the mine workers in many parts of Kentucky have not had such steady work as to make the purchase of bonds feasible in the face of the increasing cost of living.

State and Federal Aid in Coal Mine Towns

The meeting on May 19 was of a business character. The institute considered a resolution urging on the Government the necessity for avoiding the conscription and enlistment of men from the mines. This was passed unanimously but without much enthusiasm, by a *viva voce* vote. Extempore addresses were made by Dr. A. M. Peters and Miss Neville, the first offering the services of the University in the matter of gardening at the mines and the second urging that the operators utilize to the full the work of the Federal Health Service in combating the spread of trachoma, or granular conjunctivitis, a communicable disease of the eye. Miss Neville's work was strongly indorsed by Mr. Butler, who said that the Federal Health Service had done much good work among the few trachoma sufferers at his mines.

The following officers were elected for the ensuing year; President, K. U. McGuire, Coxton, Ky.; vice presidents, Perry V. Cole, H. F. Pfennig, N. G. Alford, W. E. Davis, J. J. Christy, F. Wright, R. F. Hamilton, J. C. Walker. By a change in the constitution it was made possible to elect C. W. Strickland, of Sturgis, Ky., secretary-treasurer. Hitherto it has been necessary to choose a man domiciled at Lexington, Ky., who can in that way keep in touch with the University. J. C. Miller was made assistant secretary-treasurer. He is located at the University.

In the afternoon a first-aid meet was held on the Stoll field. The interesting feature consisted in the great number of events. At first it was planned to have 15 in all, but the number was later reduced to 11 because of the shortness of time. Many had to leave by early trains. But the intention to have many events and even the execution of the purpose as far as it was fulfilled was excellent. These first-aid meets are not a passing show but an examination. By having many events each team is obliged to go before many judges, and consequently a careless judge does not make a perfect team, for a poor team is bound to find one judge whose marking is severe. The ultimate rating, however, was not a composite of all the events in which the teams participated. As a result it was possible for a team to escape certain judges, and there was a possibility that a team which did have a severe judge might happen to have concurrently an easy event (or one in which it was peculiarly well trained) to submit to his critical judgment.

A Contest with Which Everyone Was Pleased

However, the results seemed to please everyone. There was absolutely no protest or complaint of any kind. The work was uniformly good, and the judges apparently more skilled than frequently occurs when city medical men are asked to examine first-aid work.

There has recently been a general advance in the knowledge of first aid which has improved the quality of the work done by the judges. In past years it has been hard to get competent judgment from any other than mining surgeons. The war is changing that condition. The cities and small towns away from the mines are evincing a keen interest in the bandaging art.

The results of the contest were as follows:

FOUR FULL-TEAM EVENTS

	Per Cent.
Stearns Coal and Lumber Co., Stearns team	100.00
North East Coal Co	98.00
Stearns Coal and Lumber Co., Worley team	96.75
W. G. Duncan Coal Co., Graham team	96.00
Pioneer Coal Co	95.75
Fidelity Coal Co	95.75
Wisconsin Steel Co., Benham team	94.75
W. G. Duncan Coal Co., Luzerne team	94.00
Federal Coal Co	89.75

FOUR ONE-MAN EVENTS

	Per Cent.
W. G. Duncan Coal Co., Graham team	100.00
North East Coal Co	99.50
Wisconsin Steel Co	99.50
Federal Coal Co	99.50
W. G. Duncan Co., Luzerne team	99.25
Stearns Coal and Lumber Co., Stearns team	98.50
Stearns Coal and Lumber Co., Worley team	98.50
Pioneer Coal Co	97.50
Fidelity Coal Co	96.25

THREE TWO-MEN EVENTS

	Per Cent.
Wisconsin Steel Co., Benham team	100.00
North East Coal Co	100.00
Pioneer Coal Co	100.00
W. G. Duncan Coal Co., Graham team	100.00
Stearns Coal and Lumber Co., Stearns team	99.75
W. G. Duncan Coal Co., Luzerne team	98.00
Federal Coal Co	97.25
Fidelity Coal Mining Co	96.25
Stearns Coal and Lumber Co., Worley team	95.50

As is customary, prizes were awarded to all contestants, their value being carefully graded to accord with the position attained by each team in the contest.

Coal—A War Necessity*

By Franklin K. Lane†

SYNOPSIS—Without sufficient coal the country cannot hope to carry on the war. The Secretary of the Interior outlines to the Fuel Board the importance of the coal-mining industry and bespeaks the coöperation of all its branches.

One of the chief gratifications that I have had (and perhaps it is the greatest that I have had since the war began, or rather since we instituted the work of mobilizing the resources of the country), has been the coöperative spirit shown by the business men of the country.

Ever since this war started, I have been in receipt of letters from bankers, railroad men, mine owners, engineers, lawyers, men of the largest capacity and the largest income, tendering their services to the United States and offering to put not only their own services, but their own plants at the service of the Government. It would surprise the nations of Europe to know how intense is the spirit of loyalty on the part of our large business men and capitalists.

The idea that we are now working out is to get you people—and when I say "you" I mean not only the coal men of the United States, but those men who are large employers of labor, who are capitalists, in the sense that they use capital for the development of resources—to get you to coöperate in meeting the national need. I don't know to what extent you realize, but I presume you do realize as fully as myself, the greatness of this occasion; not merely as a matter of producing men, and feeding men and getting them over to the other side, but producing also those things that the Allies need, and that we ourselves need.

Coal Second Only to Food

There was a time—and it is only a century since—when practically the one thing needed by an army was food. When the lord on the hill wanted to fight his rival, to take a slice of his territory away, he had to concern himself with having a certain number of fighting men, and then with supplying them with food. War is now an industrial game; and the foundation of industry, as we know it now, is coal.

And so it is that you are at the very root and foundation of the great war industry. Unless we have an abundance, or at least a sufficiency of coal, war cannot be carried on.

Now there are two ways of dealing with a problem of this kind. One way is by the hearty coöperation of the men already engaged in the industry. The other way is by compulsion. My experience in the Interstate Commerce Commission led me to believe that the larger men in the railroad industry had quite as much vision as I had, and if I could show them the importance of an occasion they would try to meet it. So, instead of resorting to compulsion, instead of taking over mines and great operating plants, we are endeavoring to put you men to your best. This war is a challenge to us. It is a challenge to every miner and to every operator, to every railroad man and to every inventor as well as a challenge to every soldier. It is up to us to show what we can do; to prove to the men on the other side of the water that out of 150 years of freedom and the exercise of personal initiative and political independence we have developed a quality of genius that is superior to what they have been able to develop in the shorter period that they have enjoyed the benefit of free institutions. We have a reputation throughout the world as the world's greatest organizers. Let us prove that the reputation is deserved.

The problem that confronts us is not merely to meet our own demand, but a world demand when necessary. That is what this is. You know what coal is selling for in Italy, in Portugal and in France. We do not know how much of that demand must be met from American mines. I think that by fall it will be up to us to contribute very largely to the support of the munition works and the other industries, as well as the domestic supply of those countries across the water.

We Must Supply Fuel to Europe

Ours will be a problem of production and a problem of transportation to the seaboard; and then, somehow, out of the blue, must come some way of solving the problem of getting the coal across the water.

As I said at the beginning, a war cannot be carried on today without coal. So, in working for Uncle Sam, you are working for those on both sides of him and behind him; for the little powers that have been oppressed, and for the great powers struggling for their lives.

I regard this as one of the absolutely essential committees. The spirit you have shown in responding to the invitation of Mr. Peabody is one upon which I congratulate you. I know you will meet our national needs. How you can do that best must be worked out in detail by yourselves.

There are many men who believe that all of these problems can be solved by some wave of a magic wand. You who have dealt with men and with large problems, know that there is no such mysterious way of solving these great problems. They are largely problems of detail and of the management of men; of getting the machinery in motion; of getting the men to work together harmoniously. Of course, your machine is not only the machine of the mines, but also of the railroads with which your committee must deal in the closest coöperation.

What do the railroads expect to do? They have gathered the executives of 250,000 miles of railroad, and have organized them practically as a single unit. They have brought them together upon the theory that the committee of five should handle them as one system, in so far as service is concerned.

England at the beginning of the war was prepared in one respect at least—that is, in respect to her railroads. The minute war began the Government took over the railroads, upon an extremely simple plan; namely, that they should be paid the amount of net revenue per annum that they had received in 1913. Then the railroads were tied together. Unnecessary terminals and yards

*Address made at the organization of the Coal Production Committee of the Council of National Defense.
†Secretary of the Interior.

were eliminated. Things were so disposed as to unite all the railroads of England into a single system. I was surprised, in talking to Mr. Thomas, a member of the British War Delegation, a Member of Parliament, and president of the Railroad Men's Union over there (and that is an organization of 400,000 men), to learn what has resulted. Mr. Thomas told me that, notwithstanding the fact that the Government pays nothing for the transportation of troops, munitions, or actual war material, business had so increased, and the economies created were so great, that after paying the 1913 revenue to the railroads, the Government was making money out of the operation of the roads.

The Railroad Committee will work with you in all earnestness. There should be no such thing as empty car movement; they should take off some passenger train locomotives to put into freight service; they should appeal to the patriotism of the public and cut down the demurrage time; and generally institute such reforms as to give the greatest possible service to the country.

The same spirit actuates you that actuates them. You must use much the same methods. You will have to do some things that, no doubt, some will object to. You will have to do some things that will upset, to some extent, I fear, previous longstanding conditions. I myself am not able to see why all the mines should compete with one another. It strikes me that the railroad men and yourselves can meet that situation. I can see where it may be necessary to have some change in the ordinances of some cities with respect to the character of coal used. All these things must be done tentatively, simply as a war or emergency measure.

The large problem is how to secure the greatest output of coal, and to get that output to the consumer. I need not emphasize that problem. Mr. Peabody has talked it over with me, and I can see that he has a larger grasp of that problem than I.

Miner Doing a Soldier's Work

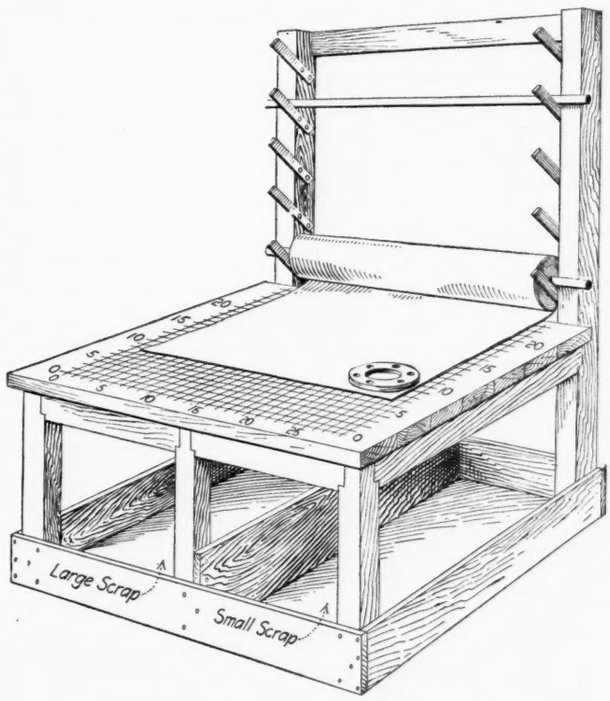
I hope you will go at this thing in true American fashion, with two fists; with the same determination to solve the difficulties that are besetting the industries of the United States today that the soldier will display when he goes across to the other side to meet the common enemy. You are doing soldier's work. It is not a thing of gratification that you have to be called here. It is, instead, a thing that should be regretted. But then the whole world-wide situation is one that must be regretted.

We are in this thing because we are determined to win, and we cannot win unless the industries that depend on you get from you the supply of fuel that is just as necessary to the continuance of their existence as are bread and meat to the continuance of the life of the soldier.

The Bureau of Mines is, of course, at your disposal. Mr. Manning, the Director of the Bureau of Mines, is a member of your committee. Dr. Smith, Director of the Geological Survey, who has been carrying on for years the statistical work of the mining industry, is a member of your committee. If there is anything further that we can do for you, we will be glad indeed if you will let us know, so that we may coöperate with you. We want the big business men of the United States to feel that the burden of carrying on this war does not rest merely upon a few Government employees, like myself, but rests, in no inconsiderable part, upon those who represent the genius of our economic and industrial life.

Rack and Bench for Packing

The illustration shows the construction of a bench for sheet packing, which is particularly useful in small plants purchasing from a distance, and in large plants keeping a supply independent of the main warehouse. Several kinds and thicknesses can be kept on the rack and the desired packing pulled out on the bench and cut to size, using a straight-edge and the scale of inches marked across the bench. In case of small flanges that can be brought in, the bench is made heavy enough so that the packing can be cut directly from the flange either by marking or peening. The under part of the bench is divided into two compartments, one for large and the other for small scraps.—*Power.*



SHEET PACKING KEPT READY FOR USE

Coal for the Navy

Conferences between Chairman Peabody, of the Committee on Coal Production, and officials of the Navy Department in Washington, are continuing. The discussions are behind closed doors and no announcements of the progress in the negotiations are being made. It is understood, however, that the price at which coal is to be furnished the government for naval purposes has not been agreed upon.

Interest this week centers on the conference to be held Thursday between railroad officials and the Tidewater shippers. It is expected that a pooling agreement will be made similar to the one reached for handling coal on the Great Lakes.

Much satisfaction is expressed in Washington at the election of F. C. Baird, the general traffic manager of the Bessemer & Lake Erie R.R., as the Commissioner to have charge of the Lake Erie Bituminous Coal Exchange, by which name the organization to administer the pooling arrangement on the Lakes is to be known.

The Labor Situation

General Labor Review

Not even the war and the shortage of anthracite have altogether prevented the illegal practice of button striking. It is a poor time to strike in the hard-coal region, even to right clear and unmistakable wrongs, should any exist, for there are a union and a conciliation board to iron out all such difficulties. Still more reprehensible is a strike at this juncture for the purpose of excluding men from the mines who under the contract have an express right to work there.

It therefore seems almost inconceivable that the Continental and Dodge collieries, of the Delaware, Lackawanna & Western Railroad Co., Coal Department, located at Scranton, Penn., were closed for several days to compel certain men to pay dues to the union. By this strike 2000 men were laid idle on May 22. The Continental mine resumed operation on May 26, an agreement with the men having been reached.

Too much stress should not be laid on this incident, for the mines in the anthracite region in general are having a phenomenally quiet time as far as labor disturbances are concerned. The mine workers are keeping their contract with commendable fidelity.

Pennsylvanians Grudgingly Ratify Contract

At last the central Pennsylvanians have accepted the contract offered them. They held out long enough to make men wonder if they were loyal to America and the flag, and if much of the sedition was not due to men of foreign names and alien sympathies. Their action grieved those who are leaders in the labor movement.

On Thursday, May 24, the central Pennsylvania mine workers' convention, assembled in DuBois, Penn., decided in favor of the contract on a roll-call vote, 434 votes being cast for acceptance and 179 votes for refusal. This result was not obtained without effort. In this outcome much credit must be given to the presence and efforts of Secretary of Labor William B. Wilson, himself a president of the District Miners' Union from 1888-1890, a member of the National Executive Board which organized the United Mine Workers of America in 1890 and the secretary-treasurer of the United Mine Workers of America from 1900 to 1908.

Contract Concessions That Mollified the Miners

The operators agree not only to pay the large advances promised in the Philadelphia agreement, but 5c. a ton at all mines where cars are pushed both ways, to and from the room parting, and 50c. a yard for the cutting of bottom in the Miller vein in the mines along the main line of the Pennsylvania, commonly known as the "Main Line" mines.

Where rooms are 7 yd. wide and the coal 3 ft. thick, there are about 7 cu.yd. or tons per yard of advance, so the increase in wage is 7c. per ton for bottom cutting. The company will have to grant this as well as pay the gathering costs. Some may well find it more profitable to pay the 5c. increase, for they will save 2c. per ton on bottom cutting and the whole gathering cost.

On the other hand they will lose by the limitation in the size of the cars that they will have to handle, for with small cars there is a greater weight of car to a given carrying capacity. The tendency is to keep all mines working along the old lines, because while taking up bottom will enable a larger car to be loaded, the expense of buying a larger car and more mules or other hauling equipment has to be considered, and in view of the present high prices the proposition is not so attractive. Besides, many rooms are already driven from a foot to 250 ft. long, and these rooms have no bottom lifted.

Clerks Will Segregate Charge for Pushing Cars

The operators are afraid that the miners will just simply add 5c. to the mining cost and forget that the 5c. is for pushing the cars. They are determined to keep the fact steadily before their men, and for this reason are, at least for the most part, resolved that they will add a new charge to their long line of extras on the pay roll—to wit, "pushing cars." If 5c. were once added to the regular tonnage rate, it would be only a short time till the miners began to clamor again that they should be paid for pushing cars, a work for which they were not, at least specifically, paid.

Probably in the long run the mines having low coal would eventually find themselves obliged to abolish the pushing of cars, pay for bottom lifting and in addition pay the differential which represents the compensation for car pushing. Some of those that have paid differentials for years realize that pushing was partly the reason for that differential. If the mines had thicker coal and were able to gather their coal from the face, the differential would have been less necessary for the securing of men.

Car Pushing Question Is Delayed, Not Settled

The operators have good reason for keeping the pushing of cars as a separate item, for there is no doubt that the miners are not willing to accept the 5c. differential as a final solution of the problem. On May 21 President J. P. White wrote District President John Brophy to the effect that at the next wage conference in District No. 2 provision must be made for the elimination of car pushing.

It seems clear that those who pay the 5c. per ton are only delaying the day when they will have to provide for some form of gathering and in many instances for the brushing of the rooms also. It is doubtful whether the change will be in the interest of efficiency where the coal is low. It will certainly hamper central Pennsylvania, which is now able to pay any wages asked but which will be at a considerable disadvantage when competition becomes as fierce as in the early part of the war.

The convention at DuBois continued in session one more day after the major decision relative to wage rates was reached. But there still remained the question of the depletion of the treasury that had resulted from the activity of the union in Somerset and Indiana Counties. Some proposed a $5 tax per capita and others a tax of 50c. for three successive months, but finally the latter proposition was accepted, though the time was reduced to two months.

The convention called on Secretary Wilson to use his influence to have a Federal investigation made of the car-pushing conditions in central Pennsylvania. A resolution was also adopted calling upon President Wilson to bring about an investigation for the purpose of regulating food prices and speculation in the necessities of life.

Order at Bolivar Secured by Military Forces

At the mines of the Lacolle Coal Co., at Bolivar, Westmoreland County, there has been a strike for more than a week, but two-thirds of the men have now gone back to work. Deputies and men from Company A, 3rd Pennsylvania Regiment, were brought on the scene and the strikers were thus prevented from interfering with the men who wanted to work. The mine is operated by a Greensburg concern and is located between Blairsville Intersection and New Florence on the Pennsylvania R.R.

The Berwind-White interests have granted a further increase in wages to their employees at Windber, St. Michael and other towns. They grant their men the 8-hour day. Formerly the mines were run on the 9-hour basis. The miners will receive 95c. per ton for mining coal, the new increase being 10c. per ton. About 8000 mine workers profit by the new scale.

Suspect That Alien Enemies Are Back of Strike

The name of the company operating at St. Michael aforesaid is the Maryland Coal Co. It is having much trouble at its mines. The attorney for the company, P. A. Rose, has issued a statement declaring that the strike has been fomented by some 30 unnaturalized Austrians. The wage paid certainly does not justify a strike, especially at this time. Enemy aliens will do well to realize that if it is found that they are promoting strikes and disorder, neither the union nor the American people will be disposed to save them from internment or imprisonment.

Somerset County conditions are unchanged. The Maple Ridge Coal Co., at Holsopple, and the Knickerbocker Smokeless Coal Co., at Hooversville, are still increasing their working forces and output. The Brothers Valley Coal Co., at McDonaldton, is working, but the force is not as large as two weeks ago. The troubles on the Berlin branch of the Baltimore & Ohio R.R. are on the mend. Western Pennsylvania and Ohio are working as steadily as the railroad-car service will permit.

Winding Gulf and New River Sign Wage Contract

The Winding Gulf and New River fields of West Virginia are to have a flat increase in the mining rate of 12c. a gross ton. A 20 per cent. increase has been granted on day labor. This concession was made on May 24, at a meeting of the operators at Cincinnati, Ohio. The 8-hour day is conceded and the United Mine Workers of America is recognized.

The operators also agree to weigh all coal. This last is an excellent concession. The whole coal field is approaching a uniform basis in its computation of coal. It is to be hoped that in a short while all coal will be weighed, all wage scales will be matters of public record and all tons will contain 2000 lb., no more, no less.

The concessions affect 25,000 men. They will involve an increase in cost of 30c. per ton. The operators have had many conferences with the union. In these S. A. Scott, H. M. Bertolet, G. H. Caperton, John Laing and George Wolfe represented the operators, and Frank J. Hayes, John L. Lewis and Frank Keeney represented the mine workers.

The Coleman Mining Co., of Cary, near Pineville, Bell County, Kentucky, has increased wages 30 per cent., this being the third advance since the first of the year, the three advances aggregating 50 per cent., according to C. R. Coleman, vice-president and general manager of the company. He claims that the Coleman Mining Co. is now paying the highest wages in the state.

Sell House Coal at Illinois Mines at Old Price

In Illinois the mine workers and operators have recently met, and the operators have consented to keep the prices of coal delivered to the mine workers at the levels formerly prevailing. The rates vary from $2.50 to $3.50 per ton in different parts of the state. The agreement affects some 80,000 mine workers. Some difficulties about dead work were also settled, the miners being granted 60c. a day extra for work of this kind.

The companies in the central competitive field, which includes Illinois, stipulated in their agreement that there would be no increase in rate for dead work or yardage, but as the mine workers viewed it, this was only where the work was on a contract basis—so much per yard or per ton and not so much per day. In this contention they were probably right. They certainly had an argument for their view of the case.

These Miners Forget They Signed a Contract

At the Royal colliery of the Chicago, Wilmington & Franklin Coal Co., Virden, Ill., there has been a strike. It was started to force an increase in wages which was in violation of the contract. It was deftly turned into a strike for the discharge of the mine manager.

Unless the strikers cease to prevent the men who are willing to work from returning to their jobs a request will be made for military protection. Many miners attempted to return to work on May 23, but as the strikers and their wives, armed with clubs, prevented their entering the mine, the mine workers who wished to work did not persist in their attempt.

The Colorado coal operators have announced an increase in wage of 20 per cent. for all workmen. The new schedule will affect 15,000 men and increase the cost of production 22c. per ton.

West Virginia Coal-Mining Institute To Hold Meeting

More than usual activity has been shown in the preparation for the nineteenth regular semi-annual meeting of the West Virginia Coal Mining Institute, which is to be held at Charleston, W. Va., on June 5 and 6.

The coal companies are showing a most commendable interest, the Consolidation at Fairmont having taken the lead in sending in over one hundred memberships with a check to cover half the fees. This is the kind of support that counts, and the scheme of a company putting up half the fee to induce its men to join the professional work looks like a solution to some of the petty financial annoyances that so often hamper the successful work of mining institutes.

Institutions like these should not be hampered in their work by a perpetual shortage of funds. They are vital to the growth and prosperity of the industry and should be encouraged. The program follows:

TUESDAY, JUNE 5, 10 A.M.

Reading of Minutes of Last Meeting.
Welcome—Herbert Frankenberger, President Chamber of Commerce; G. A. McQueen, Mayor of Charleston.
Objects of the Institute—President.
Needs of the Institute—Vice-Presidents.
Better Mine Foremen—A discussion by the Deputy Mine Inspectors.
Mine Haulage—(a) Wood Track vs. Steel; (b) Outside Tramways vs. Inside Haulways; (c) Brakes vs. Sprags; (d) Small Cars vs. Large Cars; (e) Track Gage; (f) Relative Merits of Conveyors, Monitors, Buckets, Barneys and Chutes for Lowering Coal—Round Table Discussion lead by Prof. E. M. Zern, West Virginia University.

2:00 P.M.

Address—Earl A Henry, Chief Mine Inspector.
Address—Director Manning, Bureau of Mines, Pittsburgh, Penn.
Progress in the Elimination of Major Mine Accidents—Frank Haas, Consulting Engineer, The Consolidation Coal Co.
Recovering Material—James E. Jones, Pocahontas Consolidated Collieries Co.
Meeting the Car Shortage—H. A. Land, Secretary West Virginia Coal Operators Association.

8:00 P.M.

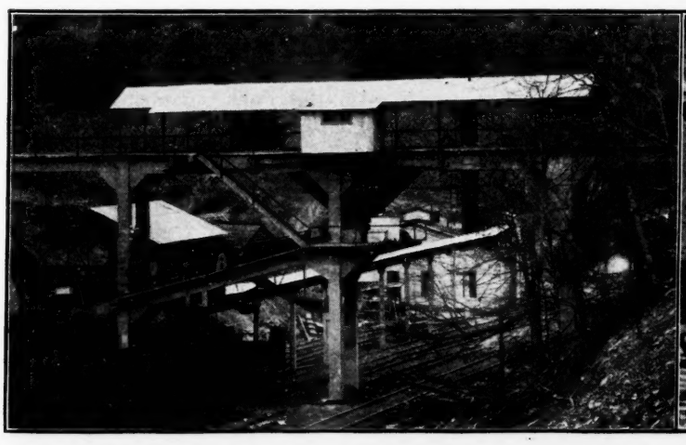
Address—Governor John J. Cornwell.
Address—John Laing, President Main Island Creek Coal Co.

WEDNESDAY, JUNE 6, 10:00 A.M.

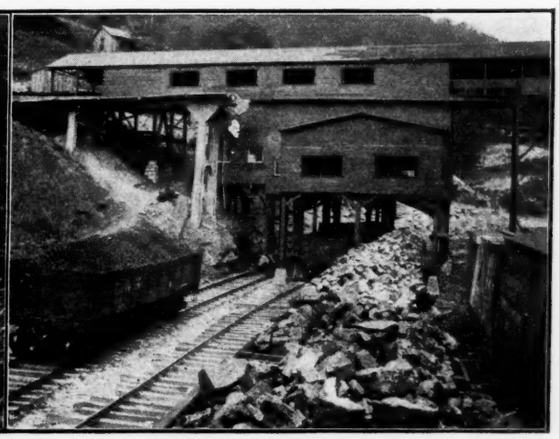
The Truth About Storage-Battery Locomotives—A. J. King, Charleston, W. Va.; Questions from those interested.
Why Shortwall Machines Are Not a Success in the Pittsburgh Seam—James Kain, Monongah, W. Va.; Discussion.
Welfare Work in the Coal Mining Industry; Its Effect on Employer and Employee—T. L. Lewis, Secretary Splint and Gas Coal Association.
Are the Contributors to Our Mining Journals Successful Mining Men?—R. Dawson Hall, Associate Editor, "Coal Age."

1:30 P.M.

Question Box—A chance to bring out information on subjects of general interest and to ascertain the experience of members as to new methods or new machinery not yet in general use.



VIEW OF TIPPLE OF DANIEL BOONE COAL CO. AT LENNUT, NEAR HAZARD, IN PERRY COUNTY, KENTUCKY



TIPPLE CONSTRUCTED FOR DANIEL BOONE COAL CO. AT LENNUT, KENTUCKY

Editorials

White Attacks Fuel Board

The Committee on Coal Production, with Francis S. Peabody as chairman, acting as a subcommittee of the Council of National Defense, is severely criticized by John P. White, president of the United Mine Workers of America.

Mr. White says that the appointment of this committee sets aside the national wage agreement recently adopted in New York City. We disagree with this assertion and point out that the coal committee is only advisory in nature. It has no real power over prices or wages. Its function is to study the national coal industry and make helpful suggestions.

We are in a war where 30,000,000 people are under arms. On the outcome of the struggle depends the freedom of the world. The present time has no parallel in history. Conditions are extraordinary and require extraordinary treatment. It is no time for politics. It makes little difference just now whether we are Democrats, Republicans or Socialists. It is also a matter of secondary importance whether we are employers or employees and whether we belong to an employers' organization or a workmen's union. First, and above all else, we are Americans, and we must now think and act solely for the good of our country.

We do not believe that Mr. White has been fair in his arraignment of the Fuel Committee. Every great industry in America is being organized for a higher efficiency by just such a committee, appointed in the same way, and by the same governmental authority. Secretary of the Interior Lane appointed Mr. Peabody, and in doing so he picked one of the strongest men in the country for this important job. Mr. Peabody has surrounded himself with an admirable personnel. John Mitchell, one of the finest representatives of American labor and American labor organizations, was asked to serve on the committee. His acceptance was prevented, or at least did not materialize. We are quite sure, although we are not making this statement officially, that Mr. White himself was offered a place on the committee. It might be well for him to explain just why he, himself, Mr. Mitchell and other representatives of labor, refused to serve on this important Fuel Board.

For Mr. White to say that this committee is composed of men who are avowed enemies of union labor is most unwarranted, and beyond our understanding, for Mr. Peabody, Mr. Moderwell and other members of the committee are employers of union labor and have been parties to the recent wage agreements entered into by the operators and the miners. S. D. Warriner, in the anthracite field, has been a member of the Anthracite Conciliation Board for years, and was an important factor in closing up the recent agreement that gave the anthracite miners a substantial increase in wages.

Mr. White must remember that all the mines in this country are not union mines; he must also remember that all the miners in America do not belong to the union. Many miners do not want to belong to the union, and it would be unjust to place such mines and such miners under the complete control of an advisory committee representing the United Mine Workers of America.

If representatives of the union did not have a hand in preparing the initial proclamation of the Fuel Committee, it was because they refused to be present and take part. To say that the committee is attempting to chain miners in the service of unfair exploiters of labor is not true. Mr. White knows that this committee has no such power and couldn't get such power from Congress in a thousand years. Every coal man of intelligence is aware that the output of coal is curtailed very considerably by the nomadic habits of many miners who work today in one place and tomorrow move to another. The committee suggests that all the men who mine coal settle in the right job, with the right company, and stick to the job. War is a game, not of comfort, but of sacrifice. Those of us who stay home must place ourselves under orders, even though our superior officer be only our own conscience.

Mr. White calls attention to the fact that the miners' union is patriotic, which statement we do not dispute, for we know from years of association just where the hearts of these men lie. If the officers of the union believe that best results can be obtained by coöperation, let them commence now and practice what they preach by cooperating with the Government and the Council of National Defense in its efforts to increase production of coal and eliminate waste.

Coal Age has always endeavored to be just in its treatment of all sides of every important question affecting coal mining. If we have enemies, even these cannot truthfully say that we fail to stand for the betterment of living and working conditions and uphold the rights of the men. More than once we have taken the side of the miners in the matter of advocating increases in wages. No paper serving any industry in America is more independent in its attitude and opinion than *Coal Age*. However, we believe it would be unworthy our work if we failed to suggest that Mr. White state the whole truth in this matter, at the same time explaining why the union refused to coöperate with the Fuel Committee, and at least suggest what plan it proposes that will be better and that will serve employers of union labor and employers of nonunion labor with equal justice.

Was It Impulse or Compulsion?

The operators have given an increase of wages to the mine workers. In one place 15 min. sufficed to decide the wage question. In most cases it took only a short while—shorter by far than to determine the wage a year ago, though this year concessions were much larger and the right even to ask a revision was disputed. Even in central Pennsylvania the difficulties were not long in being resolved and are now finally settled.

The mine workers' leaders said they would not declare a strike, and the operators claimed a certain graciousness in making the concession under those circumstances. We truly believe they are entitled to some credit. In very truth they realized their duty and partly for that reason performed it.

But they cannot claim that they are animated by lofty motives till they give higher salaries to all their official employees, thus recompensing them for the increased cost of living. As it is they are proving the contentions of the labor unionists that without collective bargaining no man can be sure of his rights.

The worst paid man is the mine foreman, the most badly abused in every way. No hour is his own, especially when the demand for coal is as keen as it is at present. He deserves more pay, but does he get it? He is doing some thinking just now, and it isn't all about his pumps and his hoists. He is wondering what differentiates him from the man who works for him, who always has made better pay and who now has had his wage increased.

The foreman is wondering what good his studying has done him, and he is questioning why he has not obtained an increase in wage with the rest. Some are getting their just dues, but in most mines the foreman has received a smaller increase than the mine worker, or none at all. And yet, are his rights any less clear?

Coal Not Even a Return Cargo

It has often been said that coal is a "return cargo." It travels in the space which the shipowner cannot fill with other merchandise. It is the last resort and unwelcome guest of the sea freighter, for it can only pay a beggarly penny for ferriage.

But the Federal Trade Commission has emphasized a fact, which has indeed been generally known in the trade, that coal is sometimes not even sought as a return cargo. No cargo at all is better sometimes than coal. This is the way in which the commission sees it:

> This conflict [of the demand for iron ore and grain transportation with the demand for coal transportation] has occurred because of higher freights paid for eastward-bound iron-ore and grain transportation than for westward-bound coal. The delay incident to loading and unloading coal, and the fact that three of the highly profitable grain or ore cargoes could be transported in the same time in which only two could be carried, if coal were taken westward, has resulted in boats, suitable for carrying coal, going westward empty, using water as ballast instead of coal.

Here is clearly no case of a Britannic aversion to the transportation and sale of American coal such as has often been alleged but never proved in reference to our transatlantic coal trade. Nor is it even a case of an unbalanced freight business making transportation of coal unfeasible.

It is a painful revelation of the cheapness of coal, even in the year of its highest price, a cheapness which even now makes a high freight rate unbearable. Coal cannot pay in some cases for the delay inherent in its loading and unloading, let alone the cost of transportation, and so it is left on the dock even by United States vessels.

But this condition is of course unusual. Coal can usually travel under the reduced rate given to return cargoes. It can generally manage to compete with rock, sand and water as ballast and do it satisfactorily. The war had barely started when coal came as ballast from England to Portland, Maine. Later sand came from Ireland to New York City and was used in subway construction. And now water displaces coal between the Lake ports, despite the inherent dangers of such an unstable cargo.

It is all a matter of accommodating high-class freight. No one will send for coal. It must steal a ride with boon companions like water, sand and rock.

No Large Profits During the War

To many people the slogan "No Large Profits During the War" appears perfectly reasonable; and some of these persons are those who have long enjoyed large incomes. But only one who believes that the taking of profits is harmful to the interests of the public can advocate operating without profit during the war. To advocate gainless industry is an evidence of a deficient knowledge of political economy.

Profit is the excess of what is received for a certain article or commodity over what was spent in manufacturing or producing and marketing it. Profit, therefore, is nothing more than the savings of capital. Where there are no profits capital is expending as much as it is receiving. It is as busy and as ineffective as a squirrel in its revolving cage. Its operations lead to no result. Pursued for a cycle of years there still would be no permanent outcome. The industrial tree would have gone on living, but no fruit would have been culled from it.

But we want capital to make savings, so that we can tax them and borrow them. We want the tree to bear, so that we can pluck its fruit. Hence industry must be conducted at profit—at larger rather than lower profit than before the war unless, indeed, the working man is prepared to make his wage savings do the work that has hitherto been done by capital savings. One can hardly hope that such a revolution will be effected, but only by such a miracle could we finance the war without the making of profits.

Phosphate for Miners' Gardens

At the recent meeting of the Kentucky Mining Institute, which was held at Lexington, Ky., on May 18 and 19, Dr. A. M. Peters urged that the operators sell phosphate at cost to the miners, as all the soils of the coal-bearing measures are deficient in phosphorus and unless supplied with that element would bear indifferently. Fortunately, both Canada and the United States have an abundance of this fertilizer, and are not dependent on Germany for this ingredient. In fact Germany is dependent on us and is suffering now that the supply is cut off.

Dr. Peters' suggestion seems good and should be put into speedy execution. Most operators do not sufficiently avail themselves of the agricultural departments of the states in which they operate, and they know little or nothing of the needs of the soil for agricultural purposes. In fact, it has not entered their heads that the state agricultural experts are anxious to be of service.

There are few farms and few gardens so sad and neglected as those around some mining towns. The operators and their employees are badly in need of expert advice in their agricultural work. The yield of the soil is far below what expert work might accomplish.

Southwestern Subcommittee on Coal Production Meets

The Southwestern subcommittee of the Committee on Coal Production of the Council of National Defense held a meeting at Kansas City, May 18, at the call of H. N. Taylor, chairman. Those in attendance were the chairmen of the states, named by Mr. Taylor, as follows: F. W. Lukins, Kansas City, representing Missouri; Ira Clemens, Pittsburg, Kan., representing Kansas; J. G. Puterbaugh, McAlester, Okla., representing Arkansas; James Cameron, Henryetta, Okla., representing Oklahoma; W. K. Gordon, Thurber, Tex., representing Texas. Mr. Taylor's division also includes Iowa, for which state no chairman has been named.

The central committee decided on a plan of organization that will carry the work into the smallest subdivision and into every mine in the entire district. Each state chairman is to name a general committee for his state and through this committee the organization is to be further extended. At each mine the committee of the state is to appoint a mine committee of an operator and a miner, whose duty it shall be to keep the work going at that mine. This mine committee is to watch for the beginnings of dissension and use every endeavor to prevent a breach and keep up production.

The Southwestern committee has already encountered an instance where the assistance of the Council of National Defense seems called for to get a mine into operation, and prompt action was taken. This is the case of the mines of the Henryetta Coal and Mining Co., Henryetta, Okla. The miners struck early in April, ostensibly because the mine was not in a safe condition. The state inspector and a deputy went through the mine and declared it to be safe. The miners refused to return to work, saying that their foreman was not allowed to go with the inspector. This foreman, however, had been discharged, and the company therefore could not for many reasons allow him to accompany the inspectors—and there had been no previous demand that a miners' representative go along on that inspection trip. The state inspector has said that he would go through the mine again with the foreman mentioned or anybody else.

The position of the operators is that the inspector can take the foreman or anybody else along on his own responsibility if he wishes to, but not as a representative of the company. The miners, it is said, are holding out, as a matter of fact, because of the discharge of the foreman, though this ground is not alleged. The local union that caused the strike has been expelled by the district union, which took the position that the miners should return to work; the union is willing that other union miners go to work in the Henryetta mine, but there are no surplus miners available. These Henryetta miners cannot, of course, go elsewhere to union mines, since they are practically outlaws now.

This was the situation when the Southwestern committee held its meeting. The committee prepared and sent the following telegram, which was signed by H. N. Taylor, as the chairman of the Southwestern states:

President, Local Union No. 2332, United Mine Workers of America, Henryetta, Okla.: It has come to our notice that the miners of the Henryetta Coal and Mining Co. are idle. It is the purpose of the Coal Production Committee of the Council of National Defense to see that all mines are operated in order that the coal may be had for the public welfare. We request that you return the miners to work by Monday morning. We have delegated Mr. James Cameron, who has been appointed as a member of this committee, to meet with you on Saturday.

The committee learned at the meeting that two men, said to be representatives of the Colorado Fuel and Iron Co., were securing miners from the Henryetta field and paying their transportation to Dawson, N. M. Mr. Taylor, under instructions from the committee, immediately wired J. F. Welborn, president of the Colorado Fuel and Iron Co., who is chairman of the subcommittee on coal production for the territory including New Mexico, of the rumor, declaring there must be some mistake and suggesting that the rumor be traced and the transportation of the miners stopped. Mr. Welborn discovered that his own company was not taking the men, but that another company was actually transporting or arranging to transport these miners away from an idle mine, and caused the company to withdraw its men and return the miners to Henryetta. The mine to which the Henryetta miners were being taken was nonunion, but its cooperation with the representatives of the Council of National Defense was immediate.

There has also been prompt action toward coöperation with the large users of coal in Kansas City. William C. Weaver, city purchasing agent, learning of the appointment of Mr. Taylor as chairman of the Southwestern committee, invited him to attend a specially called meeting of large coal users, to be held at the city hall. Mr. Weaver had arranged the meeting with the purpose of having coal cars restored for the transportation of coal, possibly through a committee to be sent to Washington. Mr Taylor explained to the meeting the relationship of the Coal Production Committee with the Council of National Defense. Although those at the meeting had been expected to complain and indicate their determination to fight for their full quota of coal, there was a pleasant surprise in the expressions of those who spoke. They all declared their satisfaction in the plans outlined for maintaining production and securing distribution, and announced their intention to do their part, urging that they be called on for help when needed.

So far, the coöperation had apparently been lining up as a battle against the railroads, but the Southwestern committee is not, apparently, going into the problem with the avowed purpose of fighting. It is tackling the problem with the desire to arrive at a solution. Mr. Taylor is now planning a meeting with the railroads, at which the officials will be asked to help and at which the assistance of the committee and all coal interests will be invoked to a speedy settlement of the coal car question.

The Southwestern committee is also planning to expedite the distribution of supplies. The chairman of each state committee will invite each operator to send word of the difficulties he encounters with reference to supplies, the lack of which restricts output. Operators and others will be urged to collect and sell junk, as a means of relieving the shortage in steel and iron.

Discussion by Readers

Need of Drawing Timber

Letter No. 2—Having had considerable experience in longwall work, both advancing and retreating, I was much interested in the view expressed by Edward Jones, *Coal Age,* May 12, p. 845, in regard to the need of drawing timber. Mr. Jones advocates the leaving of certain timbers in the waste, claiming that this practice produces "a more general and quiet settlement of the roof on the packs." He states that "when no timbers are left in the gob, we lose control of the roof pressure." This is quite contrary to my own practice and experience.

The first instance I will cite is a mine where the longwall face was carried in steps, one step being from 40 to 50 ft. ahead of the following one. Eight or ten men would load coal on a face from 80 to 100 ft. wide. A track was laid along the face. The men would load the coal into the cars on this track until it was too far back from the face, when the track was taken up and again laid along the new face of coal. When this was done, the night men would draw the posts in the back rows, leaving three or four rows standing between the coal face and the waste. These four rows parallel to the face acted to break the roof and relieve the pressure on the coal. The men thus always worked in a safe place, and the roof settled uniformly on the waste as the back posts were drawn. The method worked successfully, and no timber was left standing in the waste.

Another place, of which I had charge, was worked longwall advancing, but with a continuous face. Packwalls and cribs were built on both sides of the roads for their protection, but no timber was left standing in the waste. In this mine a man was fined for leaving a stick of timber in the waste. I remember in one case where this occurred, the man was fined 5s. ($1.25) for leaving a single prop standing in the gob. Another dayman was fined 2s. 6d. (60c.) for the same neglect.

I have seen the roof settle down gradually until it touched the waste 70 ft. back from the face, and there was not a crack to be seen anywhere in the roof. My experience tells me that it is better to take out all timber from the waste, as any posts left standing throw the weight forward on the coal and may cause it to break over the coal, which is sure to make trouble. At times when this occurs, the weight comes on suddenly and may cause an accident.

In still another instance, rooms or stalls were driven up narrow a distance of 300 yd., and the wide pillars worked back on the retreating system. The practice then was to withdraw all timbers from the waste and cause a fall of roof, so as to relieve the pressure on the pillars. Shots were sometimes placed in the roof to break it and cause a fall. It was bad practice to allow too much open space behind the retreating coal face.

In all advancing work, it has been my practice to withdraw all timber to within 12 or 15 ft. of the face and keep the packs well built to within 15 or 20 ft. of the face; but, in no instance, were timbers left standing in the gobs. It is my belief that where this practice is followed there is less coal lost that cannot be recovered than would be possible in the method described by Mr. Jones, to which I have referred. I have seen places where some props were left standing as he has described, but the result was always to throw a great weight onto the coal face, crushing the coal and, in some instances, destroying the longwall face.

Universal, Ind. JACOB RILEY.

Letter No. 3—Referring to the letter of Edward Jones, *Coal Age,* May 12, p. 845, let me say that in the Staffordshire and Worcestershire districts of England, where longwall advancing is mostly used, no timbers are allowed to be left in the gobs. All timbers are taken out a few yards behind the face. Timbers that are not broken are used again, while the broken sticks are utilized for building the roadpacks.

When working in the mines in those districts, I have often seen the mine manager (foreman) run his stick into the gob to see if he could find any timbers that were not taken out. I asked my father, at that time, why the manager was so strict, hunting for timbers in the gobs. My father, who had worked all his life in longwall mines, explained to me that if any posts were left standing in the gobs they would cause lots of trouble at the working face.

While I have seen no longwall work in this country, I can say from my experience in England that we had the least trouble with the roof when the gob was kept free of timber. It is my belief that all timber should be withdrawn from the face in longwall work.

Cadogan, Penn. JOSEPH ROUND.

Back to the Mines

Letter No. 3—From my own experience since the strike broke out in Somerset County last year I can indorse what "Anon" has said in his letter, *Coal Age,* Apr. 14, p. 677, about men being better off when they stick to their jobs in the mines.

Not wanting to lie idle during the strike, I moved to Braddock, Penn., last year, and took a job with the Carnegie Steel Works. I secured a place in the mechanical department of the works at a somewhat higher daily wage than I could earn in the mine, although in the end it only netted me $115 a month. In the same place there were men who were more familiar with the work and were earning $7 a day.

The job did not prove to be a bed of roses, however, as I soon discovered to my discomfiture. The old hands in the works had a habit of ridiculing every newcomer, whose life was often made a burden for him. One day a part of the machinery gave out suddenly, and as a result a score of men were thrown idle as only one man and a helper could work on the broken machine.

While waiting for the repairs to be made, I was hit with a big wad of greasy waste, which was thrown by one of the men. The missile struck me squarely in the eyes, blinding me so that I could see nothing for half an hour. I could not tell who threw the waste, and if I could it would have done no good to report it, as it would only have made matters worse. When I told the boss he laughed at me, taking it as a good joke. Other newcomers were treated in the same way, at different times.

One thing that impressed me was that the steel company did everything in its power to prevent accidents to the men. In every department there were bulletin boards showing the way in which accidents happen and warning all employees to be careful. However, while safety first was preached, many of the bosses were careless themselves.

In regard to labor being scarce in coal mining, the reason why this is so is largely due to the lack of good working conditions in and around the mines, and because comfortable houses are not provided for the men. The better class of miner wants a good sanitary house and a small patch of ground where he can make a garden.

After leaving the steel mills, I was glad to go back to the mine, but found that every available house where the companies kept a good store and where there were good schools, playgrounds and places of amusement was occupied, and there was no shortage of labor.

Beachly, Penn. JOHN MAJER.

Mine Lamps

Letter No. 1—That the oil lamp is by no means an obsolete factor in coal mining must be admitted, as progress always pays a certain tribute to former practice and never fails in this respect. It will generally be conceded, however, that the oil lamp makes but a feeble effort to illumine the darkness and gloom of the coal mine. At its best the light is dim, unsteady and unsanitary, by reason of its smoke, soot and grease. Compared with either the carbide or the electric mine lamp, the oil lamp sinks into insignificance.

There are some who still use the oil safety lamp, however, and the objections they offer to the adoption of the carbide lamp are, for the most part, absurd and can be brushed aside as of no importance. Some of these objections are the following:

OBJECTIONS URGED BY THOSE NOT FAMILIAR WITH THE CARBIDE LAMP

(1) The carbide lamp requires too much time to keep it in order. (2) Its first cost is high. (3) The carbide residuum remaining in the lamp after use gives off a disagreeable odor. (4) One is either out of carbide or water, or both, most of the time. (5) The intensity of the light is hard on the eyes. (6) The carbide lamp does not reveal the presence of gas.

These objections are worthy of but little consideration. It is an axiom in all the affairs of life that anything worth while is deserving of some attention to keep it in proper order. In this respect, the carbide lamp gives no more trouble to the user than the oil lamp, as both require attention to secure the best results.

The first cost of a carbide lamp is unquestionably higher than that of the oil lamp; but the cost for oil exceeds that for carbide, and the difference in the cost of maintaining the light soon makes up for the greater initial outlay. Besides, the carbide light is cleaner, brighter and more steady than the oil light.

It may be conceded that the odor escaping from the carbide refuse when cleaning the lamp is a trifle pungent, but it can hardly be called "unpleasant." The smell is not nearly so disagreeable as the smoke, soot and grease with which one comes in contact when using an oil lamp for any length of time.

There is no more necessity for being out of carbide or water than there is for finding one's oil can dry. It is only a matter of being careful to provide a sufficient supply for the day. A good miner is seldom out of oil in the mine, and when one has become accustomed to the use of a carbide lamp he will not be out of carbide or water.

EFFECT OF THE CARBIDE LIGHT ON THE EYES

The suggestion that the brightness of the carbide light is trying to the eye is only true by way of contrast. Assuming that two buddies working together use, one a carbide light and the other an oil lamp, the carbide light would be trying to the man using the oil lamp. The brightness of his buddy's light would annoy him and might even prove injurious to his eyes, because of the contrast with his own dim light. It would have the same effect as if one were confronted suddenly by a bright light in the darkness—it would cause a partial and temporary blindness.

It is true that the carbide lamp will not detect the presence of gas, and this is practically the only valid objection to the lamp, if it can be considered at all in view of its many advantages over the old dim oil light. It is proper to ask why there should be the need to detect the presence of gas on a miner's lamp when his place is properly ventilated, examined and inspected by mine officials. It would seem that the true remedy lies in the thorough ventilation of the working places rather than in the use of a lamp that will reveal these dangers.

Thomas, W. Va. W. H. NOONE.

Repair Supplies Reduce Cost

Letter No. 3—I was glad to see this question under discussion in *Coal Age,* as I have worked in and about the coal mines of this state for many years and, during that time, have often observed the serious results and loss due to the "penny-wise-and-pound-foolish" policy of some thoroughly unpractical men in charge of coal operations.

While there can be no question as to the advisability of keeping in stock what supplies are necessary for the operation of a mine, the amount of such supplies and material required will vary according to the existing conditions and the location. A mine located at an isolated point, a considerable distance from any general store or supply base, will need to keep on hand a larger stock of material than is necessary at a mine located where the needed supplies are quickly obtainable. Care must always be taken not to order supplies in too large an amount or to carry in stock material that has become obsolete and is no longer used in the mine.

As an illustration of the shortsighted policy practiced at one mine not 100 miles away from this locality, let me cite a single instance, which is not an uncommon one

in many mining districts. The rope socket, or cone, by which the rope was attached to the trip on the main slope in this mine broke suddenly, and a man was hurriedly dispatched to the surface to get a new socket. None was to be found in the supply house, however, and the superintendent's office was called up without results.

The only thing that remained to be done was to take the broken cone to the blacksmith shop for such repairs as could be quickly made. This was done; and it can be said to the credit of the blacksmith that he performed his work well and the socket was again attached to the rope and ready for use, after a few hours' delay, during which time the slope had been idle and the breaker running on wind, for there was no coal.

One can easily imagine how many rope sockets could have been purchased and kept in stock at the supply house, by the profit lost to the company owing to this delay. But, that is not all. The next day, the mine foreman received a note from the superintendent, asking him to explain the cause of the delay reported the day previous and to state, further, what he had done to prevent its recurrence. This undeserved rebuke was, as we might say, the adding of insult to injury.

Foremen Should Be Notified When Supplies Are Not Ordered

Admitting that operators and managers of coal mines must have system in the purchase of supplies, and that foremen in direct charge of work must also use judgment in anticipating the need of material, the fact still remains that if the manager or superintendent, sitting at his desk, arbitrarily cuts down or sidetracks for a time the requisition of a foreman, without informing him of so doing, it is easy to imagine the feelings of the man who is sure to be held responsible for the work, when the needed material ordered some time since is not forthcoming. He must be a pretty good Christian when, under such circumstances, one does not smell sulphur fumes within a radius of 100 ft. of the place where the trouble developed.

Yes, it is a fair question to ask, "Why did not the foreman protest and urge his need of the material ordered?" Someone may even make bold to suggest that an energetic foreman, knowing the urgent need of such an important part as a rope socket or coupling, would have taken the matter up with some one higher in authority than a delinquent superintendent. The answer to that suggestion is that the average foreman is too wise and has too much regard for his own position to go over the head of his superintendent.

An interesting incident comes to my mind of a young college graduate who was turned loose at a coal-mining camp, some years ago, being placed in charge of the purchasing department of the corporation. This young man had never seen the inside of a coal mine and had no practical knowledge of its actual necessities. He was, however, blessed with at least two ounces of common sense.

On taking up his new duties, he visited each mine and had a heart-to-heart talk with each inside and outside foreman. With tact, he learned from each man what were their particular needs and received their suggestions as to the best methods to employ in ordering supplies for their use. In this way, not only did he come to know the men, but they learned to understand him better; and, as a result, they realized to what extent they could rely upon their orders being filled promptly.

It must not be supposed that no differences of opinion developed, in respect to the merits of different articles used, such as oil, packing, steel, etc.; but the question of ordering the best material that could be purchased for the money was thoroughly discussed. It is needless to say that the new purchasing agent was a success and saved the company many times the amount of his salary, in the system he established and the quality and the prices of material purchased. I hope to see this important question thoroughly discussed, as it means efficiency in mining operations. AJAX.

Wilkes-Barre, Penn.

Water Gage in Fan Ventilation

Letter No. 4—I have been studying the question of the effect on the water gage produced by the blocking of the airway in a mine. It has been my duty, at different times, to read the water gage at the beginning and the end of each shift. The experience gained in thus watching the water gage from day to day would lead me to think that any obstruction offered to the flow of the air through the mine would give a higher water-gage reading than at other times.

It would frequently happen that the water gage would be low, and I would then order the fireman to get up more steam, in order to bring it up to its normal reading. But, whenever the reading of the gage was higher than usual, it was natural to suppose that this was caused by a greater mine resistance, due to some obstruction in the airways.

In the case mentioned by Samuel Dean, in his article, *Coal Age,* Apr. 21, p. 722, I am of the opinion that there was some reason why the water-gage reading was not increased when the airway was shut off, as it seems natural to believe that the closing of the airway would have increased the reading of the water gage.

At the mine to which I have referred, the water gage was located in the lamproom. In this mine the air current was divided into several splits, and it is true that a little obstruction in one split would throw more air into the other splits and, in that case, the water-gage reading might not be increased enough to be noticed. More accurate information could be obtained, in that case, by taking a gage reading at the mouth of each split or district in the mine, which would not be difficult, as the instrument is not costly and is easily put in position. A more extended use of the water gage in coal mining would often be the means of much saving and would secure a better ventilation of the mines. W. H. LUXTON.

Linton, Ind.

Letter No. 5—Attention is drawn, by W. A. Rowe, to a misinterpretation of the meaning of the scale shown on the left of the diagram presented in his letter, *Coal Age,* May, 19, p. 881, and described as the "ratio of water gage to tip-speed pressure."

Mr. Rowe explains that the expression "theoretical water gage" was substituted for what he terms the water gage corresponding to the "peripheral-velocity pressure," stating that, in his practice, it has been customary to speak of the pressure corresponding to the tip speed of the fan as the pressure that would be created by air having an equal velocity with the blade tips.

This would be the theoretical velocity of air, which is approximately 4000 ft. per min., for a pressure corresponding to a water column of 1 in. It is evident that, with this meaning of the words "tip-speed pressure," the ratio scale shown on the left of the diagram is twice as great as what would be required to express the "ratio of actual water-gage reading to the theoretical gage due to the tip speed of the fan," referred to in the text.

It was only natural, in the editing of this article, to understand the expression "tip-speed pressure" as corresponding to what Daniel Murgue has styled the "height created by the tangential speed," on page 19 of his "Theories and Practice of Centrifugal Ventilating Machines," where, speaking of the centrifugal fan, he states, "The theoretical depression is the double of the height created by the tangential speed."

It has always been customary when calculating the pressure or water gage that a centrifugal fan will produce, to base this estimate on the "theoretical depression," which is assumed to be twice that corresponding to the velocity of the blade tips. What Murgue has styled the "manometric efficiency" of the fan is the ratio of the actual water-gage reading to the theoretical value calculated in the usual manner.

Referring to the diagram on page 881, it is evident that the ratio of the actual water gage to the theoretical water gage due to the tip speed of the fan would be just one-half as great as that expressed by the scale on the left of the figure, and we gladly give space for this correction.

New York City. J. T. BEARD.

Sharpening Coal Augers

Letter No. 1—Replying to the request of "Blacksmith," *Coal Age*, May 12, p. 848, in regard to the method of sharpening a coal auger so as to give the best results and enable it to cut its way easily in the coal, kindly allow me to submit the following:

In this field, a while ago, machines were thought indispensable for drilling the coal until a proper method of sharpening the coal augers was employed, which has resulted in the almost exclusive use of breast augers for this purpose, and the machine has practically disappeared from the mines.

It is a difficult matter to explain clearly, and in detail, every movement required in the sharpening of a coal auger, which is not a simple process but requires much skill on the part of the blacksmith, in order to give proper shape and a good cutting edge to the bit. However, I will attempt to explain my own method, which has given good success.

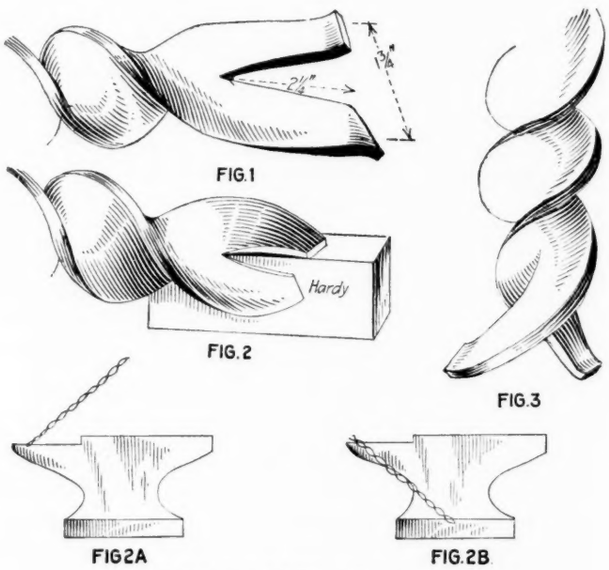
The bit or cutting end of the auger is first flattened out on the anvil and the cutting edge squared and drawn down thin. As shown in the accompanying sketch (Fig. 1), the points are then split back to a distance of 2¼ in., using a hot set for that purpose, after which, holding the auger on the anvil, strike the inside edge of each prong so as to give each a sort of curl or twist.

Now, lay the auger over the hardy set crosswise in the anvil, and strike the outer edge of one prong near the point so as to draw the cutting edges closer together. Turning the auger over, treat the other prong in the same manner. The inner edge of each of these prongs must now be beveled so as to form a cutting edge for the core when drilling, as shown in Fig. 2.

In Figs, 2A and 2B, the auger is shown as held at an angle of about 45 deg. while striking the prongs, one at a time, with a ballpeen hammer, so as to expand the opening between the prongs and give the drill the proper clearance. When one of the prongs has been treated in this way, as shown at 2A, the drill is turned over and the other prong treated in a like manner, as shown at 2B in the figure.

Different coals call for somewhat different treatment to give the bit the twist and turn that will enable it to cut to the best advantage. The operation calls for much skill on the part of the blacksmith, whose experience will enable him to judge what is required in coals of different hardness.

In this coal field, the bit is given the proper temper by allowing it to cool in the air. Miners generally want the bit soft enough that a file will cut the steel. This



HOW TO SHARPEN COAL AUGERS

enables the miner to sharpen the cutting edge of his drill, frequently, to improve its condition and enable it to cut the coal better. Our augers are all split back 2¼ in. The bits are sharpened in sets of three, as follows: The 2-ft. bit is brought to a gage of 2½ in.; a 4-ft. bit, 2¼ in.; and a 6-ft. bit, 2⅛ in. I have seen 14 augers and bits sharpened, in the manner described, in 40 minutes. R. A. SCHMIDT.

Coal Hill, Ark.

Making Up Cartridges in Mines

Letter No. 8—I have followed with interest the several letters regarding making up powder cartridges, and notice that many condemn the practice of miners keeping the powder at their homes. This practice is so general in the Pittsburgh district of Pennsylvania that it cannot be denied it is a menace to public safety. The question is, however, What steps should be taken to stop the practice?

I was born and raised in the County of Durham, England, and worked eight years in the mines of that county. To my knowledge there never was an accident occurring from the use of black powder in those mines. This is

probably owing to the stringent laws that are strictly enforced in England, in respect to the sale and use of black powder.

The English law provides that no powder shall be delivered to any person under the age of 16 years, or served to any person after 6 p.m. The law also provides a heavy fine for the making up of cartridges after 6 p.m. in winter and 8 p.m. in summer, or using any artificial light for that purpose. The larger companies have a powder magazine located at a distance from the mine and employ a man to serve the miners with what powder they require for use in the mine

While I am not familiar with the requirements of the mining law in this country, I fear there are no such strict requirements as those I have mentioned in reference to the English law. My observation leads me to believe that there is not a miner in the Pittsburgh district who works at the face and does not have at least from one to two kegs of powder at home most of the time.

The danger along this line is much greater in the large foreign boarding houses that provide lodgings for many of this class of miners. It is not uncommon, I believe, for some of these places to contain anywhere from 10 to 20 kegs of powder at one time. When a fire occurs, it is common to hear persons in the crowd exclaim, "Look out for the powder!"

It is a common sight to see miners boarding street cars with a 5-lb. can of black powder slung over their shoulder or carried in their hands; or to see miners coming out of a store with a 25-lb. keg of powder on their shoulder and start for home. The question to be decided is, "How can this practice be broken up and the danger avoided?"

Sturgeon, Penn. JAMES POTTS.

Preventing Mine Accidents

Letter No. 5—There has never been a time that I can recall when more attention has been paid to the conservation of human life, in coal mining, than during the past decade. The safety-first movement has, naturally enough, developed much difference of opinion among mining men as to the proper methods of procedure.

I have been impressed with this thought in reading the letter of D. H. Perdue, *Coal Age,* May 5, p. 801, where it is argued that the publicity given mine accidents, the display of safety signs and stereopticon views showing how many mine accidents have occurred and how they can be avoided, have little value in the way of reducing the number of mine accidents.

WELFARE WORKERS SHOULD NOT BE DISCOURAGED

Like myself and many others, Mr. Perdue has probably allowed himself to become discouraged by reason of the meager results of his own efforts and those of others, put forth in an official capacity to increase the welfare and safety of mine employees. To him and to such other discouraged ones, let me say, Cheer up, brother, the worst is *not* yet to come. I still hope that our efforts in the past will yet bear fruit, showing that our labors of love have not been in vain.

The time is not far distant when the miner will be fully educated to the importance of the safety movement, and a fewer number of accidents will appear in our mining reports—fewer widows and orphans will require our sympathy. As has been suggested, every mine worker is, in a sense, his "brother's keeper," and that fact should not permit him to be discouraged because a coworker has seemingly disregarded injunctions intended for his safety and has suffered the consequences of his neglect.

While one such instance may occur as that mentioned by Mr. Perdue, when a man was killed the following day by an accident of which he had been warned at a meeting the night before, it is impossible to say how many others took the warning and were saved a similar fate.

The safety movement, with its safety signs, lectures, and other means used, is intended to make the mine worker think of his home and his dependent family and friends; and to impress on his mind the misery and suffering that would be brought on them by some hasty or careless act of his own. Such efforts should appeal to the manhood of every miner and stimulate his regard for those who must suffer through his neglect.

DISCIPLINE MUST BE OF THE RIGHT KIND

In answer to the question of how mining accidents are to be reduced, Mr. Perdue suggests that this must be accomplished by "a rigid discipline." I think I can agree with him in this conclusion, provided I understand correctly what he means by "discipline." We all know of instances where men have been killed by falls of roof or coal, because they failed to obey the orders and instructions given them by the boss. In my opinion, the only effective means of avoiding such accidents is for the boss to remain in the place and see that his orders are obeyed.

Such a system must be enforced in mines that miners and their helpers will not be permitted to enter places that are unsafe, as reported by the fireboss in the morning, until such places have been made safe for work. Many accidents can be avoided by seeing that miners are provided with all necessary tools and supplies for their work. Orders along this line recently issued by Thomas Thomas, general superintendent of the Lehigh Valley Coal Co., to his foremen and their assistants, will be watched with keen interest by mining men in this vicinity.

Mr. Perdue refers to the old practice of sounding the roof of a place with a pick or bar as "a poor method," and states that "it furnishes little information in regard to how loose the top may be at the time." In my opinion the trained ear will at once detect an unsafe condition of the roof when the pick or bar is held loosely in the hands of the person making the test. In the mines of Germany all the deputies or bosses carry steel bars with them to test the roof when making their inspection. It is true that weak roofs should always be tested by carefully holding one hand on the rock struck. This also applies to sandrock roofs that are frequently broken or loose.

I heartily concur with Mr. Perdue's conclusions that "the only safe rule is constant watch and thoughtfulness on the part of the worker, and thorough supervision of miners by company officials." Time must be taken to thoroughly examine each working place and to direct the work necessary to make a place safe. It is of less importance that a mine official responsible for safety should give his attention to a balky mule or a derailed car. These matters must be looked after by someone else. Let us hope for a liberal discussion along this line in *Coal Age,* as a means of ultimately making the mines more safe. AJAX.

Wilkes-Barre, Penn.

Inquiries of General Interest

Uncertificated Mine Foremen

Kindly permit me to present the following question, which is of growing importance in all coal-mining states at the present time, owing to the exigencies of the war situation. May we not hope for a candid discussion by all certificated mine foremen, whose positions are most affected by the conditions and whose practical experience will enable them to give valuable though possibly prejudiced judgment in respect to safety of mines placed in charge of uncertificated foremen.

We can assume, however, that the discussion of this question will be prompted, for the most part, by patriotism, with due regard to the safety of mine workers and the security of mining property. The vital point at issue is, "To what extent must the safety of the mine be jeopardized or sacrificed by reason of the unavoidable conditions brought about by the war?" KENTUCKY.

Hazard, Ky.

This inquiry comes from a certificated mine foreman whose patriotism cannot be questioned, but who has a high regard for the sacred duties incumbent upon all mine officials charged with the safety of underground workers.

The question is a broad one and, without doubt, will call forth many shades of opinion. For many it will be a difficult question to decide. There are lives to be sacrificed on both sides, and the certainties of war must be contrasted with the possibilities of danger in the mines. We hope for a free discussion of opinion.

Valuation of Coal Lands

How many tons of workable coal are contained in a 6-ft. coal seam, lying 160 ft. below the surface, assuming that sufficient coal pillars are left in the mining of the seam to prevent the caving of the surface? Also, what would be a reasonable price for such a seam of coal underlying a farm of 360 acres, which adjoins property now being operated?

The opinions of *Coal Age* and its readers will be greatly appreciated. W. T. D., JR.

New York City.

It is customary to base any reliable estimate of the tonnage of coal underlying a piece of land on prospect records taken at numerous points on the property. Only by this means is it possible to ascertain the quantity and quality of the coal, the inclination of the seam, presence of gas or water in sufficient quantity to affect the cost of working the coal and, finally, the presence of faults and character of the underlying and overlying strata.

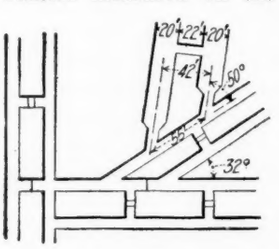
Much dependence is to be placed on the knowledge gained from the working of adjoining properties when estimating the value of the property in question. This is true, because the value of coal property depends not only on the tonnage of coal available and the surface valuation of the land but, also, on the cost of producing and marketing the output.

As explained in *Coal Age,* Feb. 10, p. 287, a simple method of determining the available tonnage per acre, for a level seam of uniform thickness, is to multiply the specific gravity of the coal by 100, which gives the available coal, in short tons per inch-acre, making allowance for a loss slightly in excess of 10 per cent., which assumes an extraction of 88.5 per cent. of the total coal underlying the property. This rule, however, is based on the usual recovery of pillar coal. The resulting damage to the surface cannot be predicted for this depth of cover. It can only be determined by experience in the district.

In reply to the second question, it may be remarked that the price of coal lands varies greatly in different localities and at different times. In general, coal land is worth the highest price it will bring in the market when offered for sale. This will be based on the tonnage available, quality of coal, cost of production, proximity to market, shipping and transportation facilities, demand and market value of coal and surface valuation of lands. The cost of labor, timber and other supplies is included in the cost of production. The property may have a greater value to the operators of adjoining property than to others, by reason of its availability to the operations already in progress.

Calculation in Surveying

I am submitting a rough sketch of rooms driven at an angle off a slant road. The rooms are driven on 55-ft. centers measured on the road, with which they make an angle of 50 deg. The slant road makes an angle of 32 deg. with the gangway level. The question that troubles me is to find the thickness of the pillars separating the rooms, which are opened 10 ft. wide on the road and increased to a width of 20 ft., as shown in the sketch. What will be the length of the crosscuts or thickness of room pillars? SURVEYOR.



Mahanoy City, Penn.

The first step is to find the perpendicular distance between room centers corresponding to the distance of 55 ft. measured on the slant road, the center lines of the rooms making an angle of 50 deg. with the center line of the road. The perpendicular distance between room centers here, is 55 sin 50 deg. = 55 × 0.766 = say 42 ft. Then, subtracting the width of the rooms from this distance gives the thickness of pillar or length of crosscut between the rooms; thus, 42 — 20 = 22 ft. The angle that the slant road makes with the gangway level does not affect this solution.

Examination Questions

Alabama Second-Class Examination Held Jan. 22-25, 1917

(*Selected Questions*)

Ques.—What, in your judgment, is the best means of reducing the friction of air in mines?

Ans.—To reduce the frictional resistance in mine ventilation, it is necessary to clean up all airways, removing refuse and other obstructions to the flow of air; enlarge all crosscuts and breakthroughs to the full size of the airways; avoid sharp turns in the airways; as far as practicable, shorten the distance the air must travel and straighten the air courses; finally, split the air wherever this can be done without too far reducing the velocity of the current, which must always be sufficient to sweep away the gases generated and prevent their accumulation in the working places and elsewhere throughout the mine.

Ques.—What is the danger of firing "tight" shots?

Ans.—A "tight shot" is one that is so bound by projecting bottoms or tops or so deeply laid in the solid that the charge of powder is unable to perform the work required in breaking down the coal. As a result, the explosion of the charge will either blow out the tamping, causing a blownout or a windy shot, or the coal may be cracked or fissured without removing it from its position in the seam. These results will depend on the condition of the exposed faces of the coal and the hardness and character of the seam.

The results of a blownout or windy shot may be serious, blowing dust into the air and igniting it so as to produce a local dust explosion. The flame of a blownout shot may be projected a considerable distance from the face and ignite gas accumulated in the waste or other void places and cause a gas explosion.

Ques.—What dangers arise from lack of judgment in placing shots in mining?

Ans.—When the miner does not use proper judgment and skill in placing a shot, the work to be performed may be either too little or too great for the charge of powder used. When the charge is laid too deep on the solid, the work required will generally exceed what the charge of powder can perform and the coal will not be broken down, but the explosion will find vent by blowing the tamping or escaping through some crack or crevice made in the seam.

A charge of powder laid too close to the exposed face of the coal or to a crack in the seam or located in a soft stratum that will "seam out" will not perform the work expected in breaking down the coal. The force of the explosion will find vent along the line of least resistance.

When the charge is located in too close proximity to a hard roof, boulder, or fault line, the results obtained are disappointing, as the force of the explosion is not well balanced and the work performed is much less than expected. The greatest skill and the exercise of the miner's best judgment are required to obtain good results in blasting coal and rock in mines.

Ques.—What precautions are necessary to be enforced by a mine foreman, in mines not producing explosive gas, but where shotfiring is done, in order to secure the greatest safety to the workmen?

Ans.—Safety in blasting, in mines not producing explosive gas, will depend chiefly on the condition in the workings with respect to the fineness and inflammability of the coal dust and the quantity of dust made in mining the coal; the care taken to remove the dust and to sprinkle the roof, floor and ribs, before firing shots in a place; the care and judgment used in locating the charge of powder; the quantity of powder employed and the tamping and firing of the shots. All dust accumulations should be completely and regularly removed from working places.

When miners are permitted to charge and fire their own shots, the mine foreman and his assistants should give each man the needed instructions and see that the work is safely performed. Instructions should always be given the miner to enable him to drill his hole so that the charge of powder will be properly located in the coal. The best practice is to employ a shotfirer to inspect, charge and fire all shots in the mine.

Strict regulations should be made and enforced so that only sufficient powder will be carried into the mine for a single shift. This powder should be contained in a metallic canister securely stoppered and placed in a locked box, in each miner's place, where loose powder is used. A better plan is to use cartridges already prepared by the manufacturer of the powder, so that there will be no necessity for the miner to make his own cartridges in the mine.

Ques.—The pressure producing ventilation in a mine being 10.4 lb. per sq.ft., what is the water gage?

Ans.—One inch of water column corresponds to a pressure of 5.2 lb. per sq.ft. Hence, a pressure of 10.4 lb. per sq.ft. will give a water-gage reading, in the mine, of $10.4 \div 5.2 = 2$ in.

Ques.—Which do you consider should be the larger, the upcast or the downcast shaft, and why?

Ans.—There are several reasons why the upcast shaft should have a larger sectional area than the downcast shaft. The principal reason is that the mine temperature is generally higher than the temperature of the outside air, this being invariably the case in the winter season, which is the most important period in coal mining. The higher mine temperature expands the intake air in the mine and produces a larger volume of the return current in the upcast shaft. The volume of the return current is also considerably increased by the addition of the gases generated in the mine. The larger volume of the return current should require a larger sectional area in the upcast shaft, in order to avoid too high a velocity in that shaft, which would unduly increase the shaft resistance.

Current Prices—Materials and Supplies

IRON AND STEEL

Pig Iron—Below are the present quotations, with a comparison of a months and a year ago:

	May 29, 1917	One Month Ago	One Year Ago
CINCINNATI			
No. 2 Southern foundry	$40.00	$37.90	$17.90@18.40
No. 2 Northern foundry	40.00	....	20.26
NEW YORK			
No. 2X Northern foundry	44.00	41.50	20.25@20.75
No. 2 plain Northern foundry	43.50	....	20.25@20.50
No. 2 Southern foundry†	44.25	....	20.25@20.50
BIRMINGHAM			
No. 2 Southern foundry	39.50	35.00	15.00
CHICAGO			
No. 2 Northern foundry	45.00	41.00	19.00
PITTSBURGH			
Bessemer iron*	45.95	42.95	21.95
Basic iron*	42.00	40.00	18.95

*These prices include the freight charge from the valley to the Pittsburgh district. †Delivered Tidewater, New York.

Structural Material—The following are the base prices f.o.b. mill, Pittsburgh, together with the quotations per 100 lb. from warehouses at the places named:

	New York	Pittsburgh	St. Louis	Chicago
Beams, 3 to 15 in.	$5 00	$5.00	$4.55	$4.75
Channels, 3 to 15 in.	5.00	5.00	4.55	5.00
Angles, 3 to 6 in., ¼ in. thick	5.00	5.00	4.55	5.00
Tees, 3 in and larger	5.05	5.05	4.60	5.05
Plates	8.00	7.00	6.55	6.50

Bar Iron—Prices in cents per pound at cities named are as follows:

	Pittsburgh	Cincinnati	St. Louis	Denver	Birmingham
May 29, 1917	4.00	4.65	4 50	4.15	3.60

Nails—Prices per keg from warehouse in cities named:

	Mill, Pittsburgh	Cincinnati	St. Louis	Denver	Birmingham
Wire	$3.50	$4.00	$4 00	$4.05	$4.10
Cut	3.75	4.00	4.85	....	....

Track Supplies—Prices are base per 100 lb f.o.b. Pittsburgh, and from warehouse at cities named:

	Mill, Pittsburgh	Cincinnati	St. Louis	Denver	Birmingham
Standard railroad spikes	$3.85@4.00	$4.75	$5.55	$4.55	$5.00
Track bolts	7.00@7.50	7.00	5 75	5.30	6.00
Standard section angle bars	3.00@3.25	....	....	3.00	....

Cold Drawn Steel Shafting—From warehouse to consumers requiring fair-sized lots, the following discounts held on Apr. 30, 1917:

Cleveland	Cincinnati	St. Louis	Denver	Birmingham
List	+15%	+10%	+30%	+30%

Horse and Mule Shoes—Warehouse prices per 100 lb. in cities named:

	Cincinnati	St. Louis	Denver	Birmingham
Straight	$6.75	$6.50	$7.25	$6.00
Assorted	7.25	6.65	7.50	6.15

Cast-Iron Pipe—The following are prices per net ton for carload lots:

	Birmingham	Chicago	St. Louis
4 in.	$53.00	$58.50	$53.00
6 in. and over	50.00	55.50	50.00

Gas pipe and 16-ft. lengths are $1 per ton extra.

Steel Rails—The following quotations are per 100 lb. f.o.b. Pittsburgh and Chicago for carload or larger lots. For less than carload lots 5c. per 100 lb is charged extra:

	Pittsburgh	Chicago
Standard bessemer rails	$40.00	....
Standard openhearth rails	38.00	....
Light rails, 8 to 10 lb	63.00	....
Light rails, 12 to 14 lb.	61.00	....
Light rails, 25 to 45 lb.	60.00	....

Old Material—Prices per net ton in Chicago and St Louis (including delivery to buyer's works and freight transfer charges):

	Chicago		St. Louis Price Delivered	
	May 29, 1917	1 Mo. Ago	May 29, 1917	1 Mo. Ago
No. 1 railroad wrought	$34.50	$32 00	$29.50	$28.00@29.00
Stove plate	17.75	14.50	14.25	30.50@31 00
No. 1 machinery cast	25.50	21.50	....	14.00@14 50
Machine shop turnings	12.75	10.50	13.50	21.50@22 50
Cast borings	12.75	11.00	12.75	10.50@11.00
Railroad malleable cast	24.75	21.50	21.50	20.50@21.00

*Gross ton.

Freight Rates—On finished steel products in the Pittsburgh district, including plates, structural shapes, merchant steel, bars, pipe fittings, plain and galvanized wire nails, rivets, spikes, bolts, flat sheets (except planished), chains, ets., the following freight rates are effective in cents per 100 lb.:

Baltimore	15.40	Pacific Coast (all rail)	65.00
Buffalo	11.60	Philadelphia	15.90
Chicago	18.90	St. Louis	23.60
Cleveland	10.50	Denver	68.60

Pipe—The following discounts are for carload lots f.o.b. Pittsburgh basing card in effect May 1, 1917:

BUTT WELD

Steel Inches	Black	Galvanized	Iron Inches	Black	Galvanized
⅛, ¼ and ⅜	42%	15½%	¾ to 1½	38%	22%
½	46%	31½%			

LAP WELD

2	42%	27½%	1¼	23%	8%
2½ to 6	45%	35½%	1½	30%	16%
			2	31%	17%
			2½ to 4	33%	20%
			4½ to 6	33%	20%

BUTT WELD. EXTRA STRONG PLAIN ENDS

⅛, ¼ and ⅜	38%	20½%	¾ to 1½	38%	23%
½	43%	30½%			
¾ to 1½	47%	34½%			

LAP WELD. EXTRA STRONG PLAIN ENDS

2	40%	28½%	1¼	24%	8%
2½ to 4	43%	31½%	1½	30%	16%
4½ to 6	42%	30½%	2	32%	19%
			2¼ to 4	34%	22%
			4½ to 6	33%	21%

Stock discounts in cities named are as follows:

	New York		Cleveland		Chicago	
	Black	Galvanized	Black	Galvanized	Black	Galvanized
¾ to 3 in. steel butt welded	44%	28%	43%	28%	43%	28%
3½ to 6 in. steel lap welded	28%	10%	39%	25%	39%	25%

Malleable fittings, Class B and C, from New York stock sell at 5 and 5% from list price. Cast iron, standard sizes, 34 and 5%.

SHOP SUPPLIES

Nuts—From warehouse at the places named, on fair-sized orders, the following amount is deduced from list:

	New York		Cleveland		Chicago	
	May 29, 1917	One Year Ago	May 29, 1917	One Year Ago	May 29, 1917	One Year Ago
Hot pressed square	List	$2 50	$1.65	$3.00	$3.00	$3.25
Hot pressed hexagon	List	2.50	1 60	3.00	3.00	3.25
Cold punched square	List	2.00	1 40	2.65	2.50	3.00
Cold punched hexagon	List	2.50	1.40	3.25	3.00	3.50

Semifinished nuts sell at the following discounts from list price:

	May 29, 1917	One Year Ago
New York	50%	50—10%
Cleveland	50%	65%
Chicago	50%	65%

Machine Bolts—Warehouse discounts in the following cities:

	New York	Cleveland	Chicago
⅜ by 6 in. and smaller	33⅓%	40%	35—5%
Larger and longer up to 1 in by 30 in.	20%	30%	20—2½%

Rivets—The following quotations are allowed for fair-sized orders from warehouse:

	New York	Cleveland	Chicago
Steel 7/16 and smaller	30%	35%	40%*
Tinned	30%	35%	40%*

*For less than keg lots the discount is 35%.

Button heads, ¾, ⅞, 1 in. diameter by 2 in. to 5 in. sell as follows per 100 lb:

New York ..... $6.50 Cleveland ..... $5.40 Chicago $5 00

Coneheads, same sizes:

New York ..... $6.00 Cleveland ..... $5.45 Chicago $5.10

Wrought Washers—From warehouses at the places named the following amount is deducted from list price:

New York ..... $4.00 Cleveland ..... $4.80 Chicago $5.00

For cast-iron washers the base price per 100 lb. is as follows:

New York ..... $2.50 Cleveland ..... $3.25 Chicago $3.00

MISCELLANEOUS

Greases—Prices are as follows in the following cities in cents per pound for barrel lots:

	Chicago	St. Louis	Birmingham	Denver
Cup	6	8@14	7¼	8
Fiber or sponge	6¼	....	....	13
Transmission	6¼	10	10	13
Axle	3½	4	3¾	4
Gear	5	6	5¼	4½
Car journal (S. & F.	4½	5@ 8	2½	3½

Babbitt Metal—Warehouse prices in cents per pound:

	New York		Cleveland		Chicago	
	May 29, 1917	One Year Ago	May 29, 1917	One Year Ago	May 29, 1917	One Year Ago
Best grade	70.00	62.50	74.00	58.75	65.00@70.00	60.00
Commercial	40.00	32 50	22.00	21.00	5.00@30.00	26.50

Hose—Following are prices of various classes of hose:

	Fire
	50-Ft. Lengths
Underwriters', 2⅝-in.	55@60c. per ft.
Common, 2½-in.	60% from list

	Air		
	First Grade	Second Grade	Third Grade
¾-in., per ft.	$0.45	$0.25	$0.18

Steam—Discounts from list

First grade..... 33⅓% Second grade..... 40% Third grade..... 50%

Leather Belting—Present discounts from list in cities named:

	Medium Grade	Heavy Grade
Cincinnati	40%	35%
St. Louis	45%	40%
Denver	40%	45%
Birmingham	40%	35%

Rawhide Lacing—40% off list.

Packing—Prices in cities named are as follows:

Valve and Stu ng-Box	Cincinnati	Denver	St. Louis	Chicago
Twisted plain, 25-lb cartons	$1.35	$1.25	$1.25	$0 80
Twisted graphite, 25-lb. cartons	1.55	1.40	1.25	.90
Braided plain, 25-lb. cartons	1.35	1.50	1.50	1.00
Braided graphite, 25-lb. cartons	1.55	1.60	1 50	1.10
Steam (in 25-and 50-lb. cartons)				
First grade	1.00	.85	.80	.75
Second grade	.35	....	....	.50
Piston (in 25- and 50-lb. cartons)				
Asbestos, duck and rubbers	.90	1.50	1.50	1.25
Flax, first grade	.40	.65	.60	.85
Rubber and duck	.80	.65	.75	.90

Manila Rope—Price in coils per lb. in cities named, ¾ to 1½ in.:

Boston	$0.27	Los Angeles	$0.23½
Cincinnati	.30	San Francisco	.25
Kansas City	.26½	Seattle	.28½
New Orleans	.26	Denver	.30
Chicago	.25½		

Wire Rope—Discounts from list price on regular grades of bright and galvanized are as follows:

	New York				
	May 29, 1917	One Year Ago	St. Louis	Chicago	Dallas
Galvanized	10-2½%	20-2½%	5-2½%	10-2½%	2½-12½-5%
Bright	20-2½%	30-2½%	15-2½%	20-2½%	12½-12½-5%

Pipe and Boiler Covering—Below are discounts and part of standard lists:

PIPE COVERING		BLOCKS AND SHEETS	
Pipe Size	Standard Thickness Per Lin.Ft.	Thickness	Price per Sq.Ft.
1-in.	$0.27	½-in.	$0.27
2-in.	.36	1 -in	.30
3-in	.45	1½-in.	.45
4-in.	.60	2 -in.	.60
6-in.	.80	2½-in.	.75
8-in.	1.10	3 -in.	.90
10-in.	1.30	3½-in.	1.05

85% magnesia high pressure..... 15% off

Air cells for low-pressure heating and return lines { 4-ply..... 58% off; 3-ply..... 60% off; 2-ply..... 62% off

Linseed Oil—These prices are per gallon:

	New York		Cleveland		Chicago	
	May 29, 1917	One Year Ago	May 29, 1917	One Year Ago	May 29, 1917	One Year Ago
Raw in barrels	$1.31	$0.73	$1.32	$0.75	$1.30	$0.78
5-gal. cans	1.41	.83	1 42	.85	1.35	.88

White and Red Lead in 500-lb. lots sell as follows in cents per pound:

	Red				White			
	May 25, 1917		One Year Ago		May 25, 1917		One Year Ago	
	Dry	In Oil	Dry	In Oil	Dry and In Oil		Dry and In Oil	
100-lb. keg	12.25	12.50	10.50	11.00	12.00		10.50	
25- and 50-lb. kegs	12.50	12.75	10.75	11.25	12.25		10.75	
12½-lb. keg	12.75	13.00	11.00	11.50	12.50		11.00	
1- to 5-lb. cans	14.25	14.50	12 50	12.50	13.50		12.50	

Calcium Carbide—Price f.o.b. cars at warehouse points in Eastern States is $82.50 per ton for Cameo, $87.50 for Union.

Common Brick—The prices per 1000 in cargo or carload lots are as follows:

Cincinnati	$9 50@10.50	Birmingham (clay)	$7.50
St. Louis	7.00	Birmingham (shale)	8.50
Denver	8.00		

Lumber—Price of yellow pine per M in carload lots:

	1-In. Rough, 10 In. x 16 Ft.	2-In. T. and G.	8 x 8 In. x 20 Ft.
Cincinnati	$28.00	$40.00	$36.00
Denver	34.00	....	34.00
St. Louis	35.00	35.00	37.00

Roofing Materials—Prices per 100 lb. f.o.b. Chicago or St. Louis:

Tar felt (14 lb. per square of 100 sq.ft.)	$2.75
Tar pitch (in bbl. of 400 lb. each)	.60
Asphalt pitch (in bbl. of 400 lb. each)	3.25
Asphalt felt	1.40

Prepared Roofings—Standard grade rubbered surface complete with nails and cement costs per square as follows in Chicago or St. Louis:

	1-Ply	2-Ply	3-Ply
No. 1 grade	$1.40	$1.65	$1.90
No. 2 grade	1.25	1.50	1.75

Asbestos roofing costs as follows:

2-ply ..... $2.25 3-ply ..... $3.25 4-ply $4.25

Asbestos asphalt saturated felt (14 lb. per square) costs $5.35 per 100 lb.

Slate surfaced roofing (red and green) in rolls of 108 sq.ft. costs $1.90 per roll.

Shingles, red and green slate finish, cost $4.85 per square.

Hollow Tile—The price per 1000 in carload lots f.o.b. mine is as follows:

	4 x 12 x 12	8 x 12 x 12
Cincinnati	$68.80	$129.00
St. Louis	60.00	112.50
Denver, per ton	9.00	8.00

	Cincinnati		St. Louis		Denver	N. Y.
	Plain	Corrugated	Plain	Corrugated	Plain	Plain
18-20 black	$7 50	$12.50	$8.15	$8.20	$8.65	$9.05
28 black	8.50	5.50	8.35	8.40	8.85	9.25
10 galvanized	....	....	10.20	None	10.45	....
18-20 galvanized	8.75	16.75	10.40	None	10.65	10.40
28 galvanized	9.75	8.75	11.00	11.05	11.25	11.00

Copper Wire—Prices in cents per foot for rubber-covered wire in standard quantities of 1000 ft.

	Denver			St. Louis			Cincinnati		
No.	Single Braid	Double Braid	Duplex	Single Braid	Double Braid	Duplex	Single Braid	Double Braid	Duplex
14	$13.10	$17.55	$31.60	$14.00	$16.00	$28 00	$13.75	$16.75	$32.00
10	28.55	32.25	63.95	28 30	31.80	63.65	27.10	31.00	55.55
8	40.80	45.05	89.75	40.70	44.70	88.90	36.85	41.75	79 30
6	....	69.15	....	....	69.10	....	75.25	79.75	159.50
4	....	99.95	....	....	110.35	....	108.15	113.65	....
2	....	150.15	....	....	161.00	....	161.50	168.00	....
1	....	194 35	....	....	211.00	....	210.00	218.50	....
0	....	233.75	....	....	256.50	....	264.50	264.50	....
00	....	....	....	....	316.00	....	324.00	324 00	....
000	....	....	....	....	385.00	....	398.00	398.00	....
0000	....	....	....	....	469.50	....	486.00	486.00	....

EXPLOSIVES AND ACCESSORIES

Dynamite—Prices per pound f.o.b. nearest railroad stations in Ohio, Indiana, Illinois, Michigan, Wisconsin and Dubuque County, Iowa, are as follows:

Low-Freezing Ammonia	Carload of 20,000 lb.	Ton Lots	200-Lb. Lots*
40%	15½	17	18¼
60%	19½	21	22¼
Low-Freezing Gelatin			
40%	18	19½	20¾
60%	25	25½	26¾

*Less than 200 lb., f.o.b. shipping point.

Price in cents per pound at cities named:

	Low Freezing	Gelatin		
	20%	40%	60%	80%
Cincinnati	.15¾	.18¼	.22¼	.33¼
Kansas City	.16	.21	.27	.33½
New Orleans	.17½	.19¾	.23¾	....
Chicago	.14½	.19	.25	.32

Blasting Powder—Price per keg:

		Carload Lots Delivered	Less Than Car Lots
Ohio, f.o.b. Columbus	400 kegs	$1.50	$1.80
Indiana, f.o.b. Aetna	800 kegs	1 55	1.80
Indiana, f.o.b. Indianapolis			1.80
Illinois, f.o.b. Chicago	400 kegs	1.57½	1.80
Iowa points on Mississippi River, f.o.b. St. Louis			1.80
Missouri points on Mississippi River, f.o.b. Des Moines			1.85
Missouri points on Mississippi River, f.o.b. Saginaw			1.90
Michigan, So. Peninsula only, f.o.b. Kansas City			1.90

Above prices are for CC, C, F, FF, FFF sizes. Price on FFFF size 5c. per keg advance over above prices.

Safety Fuse—Prices f.o.b. New York, Chicago, per 1000 ft., less quantity discount:

Cotton	$6.65	Beaver	$6.75
Single tape	6.85	Anchor	7.65
Double tape	7.75	Crescent	7.65
Triple tape	8.60		

Blasting Caps—List price of blasting and electric blasting caps f.o.b. shipping points in states named:

	Electric Blasting Caps, Copper Wire Price per 100					Blasting Caps	
	No.	4 Ft.	6 Ft.	8 Ft.	10 Ft.	No.	p. 1000
Ohio, Indiana, Illinois and So. Michigan	6	$6.00	$7.00	$8.00	$9.00	5	$14.00
	8	8.00	9.00	10.00	11.00	6	17.00
						8	28.00
Missouri, Iowa and No. Michigan	6	6.10	7.11	8 12	9.13	5	14.15
	8	8.10	9.11	10.12	10.13	6	17.15
						8	28.25

Coal and Coke News

WASHINGTON, D. C.

Coal trade associations throughout the country have agreed to coöperate with the Geological Survey to the extent of furnishing weekly and monthly tonnage statistics. In this way the Geological Survey will be a general clearing house for all the trade associations in the same manner as the individual associations are clearing houses for information from each member. This will enable the Survey to provide the committee on coal production with some valuable information which heretofore it has not been in a position to furnish.

During the Interstate Commerce Commission hearing on the increase of freight rates, President Rea, of the Pennsylvania company, was asked if he would oppose government regulation of the price of coal, in order to protect the railroads against a high price for this necessity. Mr. Rea declared that he does not believe such a general control of prices by the government would be wise in this country.

Special efforts on the part of C. E. Lesher, of the U. S. Geological Survey, have resulted in 27 additional railroads agreeing to contribute statistics for the monthly report of coal shipments which is issued by the Survey. This report shows the number of car loads of bituminous coal originating on the roads reporting. The roads are divided into convenient groups and the total number of coal shipments originating on these roads are given separately for each group. Most of the important coal-carrying roads now are furnishing the Survey with copies of the daily reports of their coal forwardings. That the information contained in the monthly coal statement is of value is demonstrated by the fact that thousands of requests to be put on the mailing list have been received.

A list of all operators in the low volatile fields has been furnished the committee on coal production by the Geological Survey. These operators will be called upon to bid on contracts to supply coal for the use of the government in the District of Columbia. At the same time a list of the producers west of the Mississippi was furnished so that bids could be asked for the coal to supply more than 100 Indian schools.

Every retailer, wholesaler and jobber of coal in the District of Columbia has been called upon by the Federal Trade Commission to furnish information as to shortage of supply, prices and inability of consumers to obtain coal at market prices. The information is to be furnished prior to June 5. Attention is called to penalties to which those are liable who make false returns.

HARRISBURG, PENN.

That an effort has been made to "pickle" the Woodward amendments to the workmen's compensation act, backed by the United Mine Workers and other labor unions of the state, was disclosed on May 22, members said, when a motion was made in the House to discharge the Labor and Industry Committee from further consideration of the measure which had been in committee since March. The motion was passed after a long and heated debate, but the bill could not be placed on the calendar because it was "lost."

The fight that centered about the action of the labor people was the bitterest that has marked the session of this house this year, and various charges were made during the discussion. Representative Fowler, who is also a member of the tri-district board of the mine workers union, started the fight by asking for certain information.

It developed that a majority of the committee had reported the bill with an affirmative recommendation, and that Chairman Fretz of the subcommittee was not present, and that the "bill was lost."

The Woodward bill authorizing the Governor to suspend, by proclamation, labor laws during the war has been amended in the House by Mr. Dunn, so that it shall not be general, but covers only those classes of industry deemed necessary. It also provides that "No suspension shall be made by the Governor until after he has made a full investigation and had public hearings and has satisfied himself of the reasonable necessity for such suspension. All suspensions shall be stated, maximum periods and renewals of such suspensions may be made only after reinvestigation in the same manner as original suspension."

Defeat faces the Woodward coal tax bill unless unforeseen developments make some change in the present outlook.

Legislative leaders on the Senate committee of Ways and Means realize this, and an effort to save the coal tax measure was made in the form of a compromise that the tax shall be imposed for only two years. This compromise is said to be acceptable to the forces opposed to the tax bill in its present form. The compromise for a two per cent. tax upon anthracite and bituminous coal for the next two years is the only hope which proponents of the coal tax measure have to prevent the complete annihilation of the proposition that is so necessary to a full development of a solution of the mine cave menace in the anthracite region.

Defeat of the coal tax in Senate committee is laid to the objection of the bituminous operators who say the state tax will impose restrictions upon Pennsylvania that will not be laid upon this commodity produced in other states. They are said to be content to have the coal taxed for two years because of the present scarcity of the product and the probability that the present record prices will continue for that period. Abandonment of the coal tax bill, according to Senate leaders during the week, is co-incident with the decision not to pass the other Woodward bills taxing gas and oil.

Why this decision was made in face of the fact that these bills had been introduced by the chairman of the House appropriation committee and with the sanction of the joint revenue commission and the state administration is difficult to explain.

The tax on coal was part of the program adopted to provide surface support for the anthracite region. Without a tax on coal, and a dedication of a fund for that purpose, the Ramsey mine cave bill will be inoperative. That bill imposes upon the state the duty of supporting the surface. The opinion here is that the Ramsey bill will be passed.

The McKee bill to suspend the full crew law for the period of the war and six months thereafter scheduled by its backers to be reported from the railroad's committee of the Senate on May 23, is still resting peacefully in that body, with the prospect of being buried there.

It was this measure, which brought nearly 300 railroad and coal officials, prominent corporation and labor lawyers and labor leaders to the capitol on May 22, where it was the subject of a long and bitter argument between the railroad managers and representatives of the railroad men's brotherhoods.

An indication of the shortage of railroad labor was given by Superintendent J. J. Mantel, of the Erie system, who declared that the road is 3500 men short right now and that because of the shortage, the speed between New York and Chicago had been restricted and that the normal freight and coal car supply of 65,000 cars is 15 per cent. short.

Following its report early in May to the Senate, in which it was asserted that the hard coal prices prevailing before last April were excessive, the Federal Trade Commission on May 22, according to reports received here from Washington, acting upon the suggestion of the Department of Justice, has sent agents into the anthracite fields of this state to make an investigation. This inquiry looks to legal action, and it is indicated that prompt prosecutions will be started to force the hard coal operators to reduce prices.

The commission expects to expose any unscrupulous wholesaler, jobber or retailer who seeks to mislead the public into a belief that exhorbitant prices are justifiable. The official statement issued by the Trade Commission is:

"In its interim report of May 4 to the United States Senate the Federal Trade Commission promised that its utmost efforts would be used to assure fair distribution and fair prices of anthracite coal.

"The commission has sent agents into different parts of the country, who will observe closely throughout the anthracite trade the operation of plans formulated at recent conferences of the commission with operators, jobbers and representative retailers for bringing prices down to moderate levels and keeping them there.

"These field agents will report promptly to the commission for appropriate action against any renewal of the intolerable abuses that marked the activities of certain elements in the trade during recent months.

"The independent operators have realized that the situation calls for public-spirited action on their part, and it is expected that they will reduce their present prices to moderate levels for the season and coöperate in every way with the commission."

PENNSYLVANIA

Anthracite

Honesdale—The old gravity road bed extending for several miles through Wayne and Lackawanna Counties, and which for the past several years has been the property of the Pennsylvania Coal Co., has been conveyed to C. B. Price and E. R. Shurtless of Scranton. When the road was constructed some 50 years ago the roadbed was made entirely of waste coal. In these later years this waste possesses considerable value, as it is almost entirely buckwheat. All that will be necessary for the marketing of the coal is washing and loading. The doing away with the old roadbed will mark the passing of the first gravity railroad constructed in the northeastern part of Pennsylvania.

Georgetown—Members of four families were partly overcome by black damp on May 24, when fumes entered their homes from crevises in the earth over old workings of the Red Ash colliery. Similar outpourings of gas from the Red Ash workings endangered the lives of other families in Georgetown about a year ago. Residents say that the fire which has been burning in these workings for years is nearing the surface and the mine gas escapes through fissures in the earth.

Treskow—There has been considerable subsidence recently of the surface over Yorktown colliery between this place and Slabtown.

Bituminous

Chambersburg—The Louise Coal Co., has filed a complaint with the Public Service Commission, charging the Huntington & Broad Top R.R. with discrimination in car service for mines.

Pittsburgh—The Ohio River Coal Co., formed recently by Pittsburgh men has taken out options on about 3000 acres of Freeport coal in Green Township, Beaver County. Engineers are now at work on the ground, laying out a proposed private railroad to connect with the new railroad of the Pennsylvania system now under construction.

Washington—Deeds have been recorded here by several residents of the county, transferring the Pittsburgh seam of coal under 22 tracts of land to the Lincoln Gas Coal Co. of Pittsburgh. The coal is located in Buffalo, Canton, North Franklin and South Franklin Townships. It is understood that the consideration was over $200 per acre.

Connellsville—The Hecla Coal and Coke Co. is constructing a river tipple at its Isabella plant so that it may ship by river barge as well as by rail. The work is progressing rapidly and the new tipple will be in operation shortly.

Somerset—J. F. Naugle of this city has acquired about 400 acres of coal land around Somerset. Some of the coal is in the city limits and underlies the yards of the Baltimore & Ohio R.R. It has not been announced whether he intends to develop the tract at once or not.

Pittsburgh—The Four States Coal Co., formerly controlled by the John H. Jones interests, has sold its Dorothy and Sarita mines to the Chesapeake & Ohio Railroad Co. This company will operate the mines to secure coal for its own use as railroad fuel.

WEST VIRGINIA

Princeton—The recent past has witnessed a heavy movement of coal from Princeton to Roanoke over the Virginian R.R. This month is expected to break the road's monthly tonnage record in the movement of coal to Tidewater by a large margin.

Montgomery—The Federal Connellsville Coal and Coke Co. has purchased the coal underlying the George Blosser farm on Cheat River, and will begin shipping coal as soon as men can be secured to operate the plant. All the operations in Cheat Neck are badly handicapped through a shortage of men.

Charleston—The coal-mining business in West Virginia is in better shape now than it ever has been before. The operating companies have all the orders they can fill, and coal is being moved as rapidly as cars for its transportation can be delivered at the tipples. The railroad car shortage continues to be the one great drawback to the prosperity of the operators. Many of the mines throughout the state are working only part time. If they could secure cars sufficient to meet their demands the mines could be operated at full time, and even if that were the case, there would be delay in filling the orders, because of the present unprecedented demand for fuel.

McWhorter—The power plant at the McCormick Coal Co. was recently destroyed by fire, resulting in the entire destruction of the engine room and the boiler house with a loss of approximately $25,000. While the ruins were still smoking, a contract was concluded with the Monongahela Valley Traction Co. for power to be taken from the transmission lines of that firm and for complete electrical machinery to be installed at once. It is hoped that this machinery can be installed and in operation shortly.

ALABAMA

Benoit—The officials of the Benoit Coal Co. have erected a modern Community Hall for white employees, a nice library being provided along with other accommodations for the pleasure of the men and their families. A building of similar character is contemplated for the colored employees.

Birmingham—The Power Plant of the DeBardeleben Coal Co. at Sipsey, Walker County, was struck by lightning recently. The building and machinery being seriously damaged, operations were suspended for several days on account of the accident.

KENTUCKY

Whitesburg—Several of the operating coal companies in this section have made increases in their plants. Mines are now reporting a better run than for several months passed.

One of the most important coal land deals made in the eastern Kentucky coal fields in several months was finally closed when W. Henry Potter, S. L. Bastin and others of the Detroit-Elk Coal Co. recently organized with offices in Lexington purchased the Wright-Potter tract consisting of about 2000 acres of Elkhorn coal. Underlying the property are several good workable beds, besides the main Elkhorn seam. It is understood that development on a large scale is to be started at once. The Louisville & Nashville R.R. will build a 3-mile branch road out from Kona Station to the property.

Seco—The South East Coal Co., with operations at Seco and LaViers is beginning the construction of a new town at the mouth of Millstone Creek a short distance above LaViers where miners for that place will be given homes, as building ground is inadequate at LaViers. The company is completing 40 new miners' residences in Seco.

Earlington—The St. Bernard Mining Co., which has given liberally of land for use of corn, potato and bean clubs, has donated an acre for the use of the faculty of the John B. Atkinson Memorial School here. It is the purpose of the faculty to grow a crop of potatoes and with the proceeds to purchase a piano for the school.

Central City—The Greenville Coal Co. will open its mines at Browder at once, under the supervision of George Sears, who has resigned as Assistant State Mine Inspector.

Covington—Suit to forfeit the rights and franchises of the Hatfield Coal Co., of Covington, has been instituted in the Circuit Court by Commonwealth's Attorney Blakely, on behalf of the state. It is alleged that the price of coal in Kenton County has been fixed and maintained and that the defendant company has violated provisions of the anti-trust law. A fine of $10,000 is also asked to be assessed against the company.

Frankfort—Section 2729, Kentucky Statutes, requiring mines to be drained "as directly as practicable to adjacent streams or water courses" renders mining companies imune against prosecution for maintaining nuisances under the common law for polluting streams with the poisonous waters from the mines, killing fish and making the water unfit for live stock to drink. This is the finding of the Court of Appeals of Kentucky which affirmed the Hopkins Circuit Court which had dismissed prosecutions against the Kington Coal Co. and the St. Bernard Mining Co. The court, however, held that this decision does not affect the rights of owners of private property damaged by the pollution of waters to damages.

OHIO

Steubenville—The recent fire at Little Kate mine No. 2 of the National Coal Co. in Jefferson County caused a loss of approximately $10,000 to the tipple and tracks. Much of the tipple was of steel construction, which is still intact. The work of rebuilding will be started at once under the direction of General Superintendent Murray.

Columbus—Columbus coal operators have been advised that F. C. Baird, freight traffic manager of the Bessemer & Lake Erie R.R., has been selected to direct the distribution of all coal equipment employed in the Middle West, and the expediting of coal shipments by water from Lake Erie ports, under the orders of the coal committee of the council of national defense. He will be placed in charge of operation of the group plan of handling coal from the mines of Ohio, West Virginia, western Pennsylvania and eastern Kentucky, in accordance with the arrangements made at the Washington conference.

Athens—Plans are under discussion for the use of Ohio penitentiary prisoners to mine coal on state lands for the use of state institutions. The high price of coal, and the fact that there are known to be deposits of fuel on lands owned by the state, have combined to make the idea interesting to the State Board of Administration. If necessary, mines in operation may be leased and worked by the state under the plan indicated. Details are now being worked out.

Lamira—The National Coal Co., which recently purchased the farm of J. I. Lewis and other adjoining coal properties, recently begun active operations. Everything will be rushed to completion as quickly as possible, including the company houses, tracks, etc. This firm expects to be shipping coal by fall.

Crooksville—Both the larger and smaller coal mines of the Crooksville field are being worked full time under a steady and increasing demand for Crooksville coal. The owners of small country mines whose output a short time ago could only be sold to domestic consumers in the immediate neighborhood are finding a steady demand for the entire product of their operation at prices unheard of two years ago.

ILLINOIS

Seneca—William Jamison, who bought 340 acres, two miles south of here, two years ago for less than $100 an acre, has found, by boring, that the land is underlain with between 4 and 5 ft. of third vein coal at a depth of about 100 ft. The coal has a good slate roof, and a 6-ft. fireclay floor. He will form a company and sink a shaft.

Staunton—What is said to be the largest coal shaft in Illinois, is being sunk 7 miles northwest of here by the Superior Coal Co. This shaft is to be 16 x 26 ft. The hoisting capacity will be 12,000 to 15,000 tons a day. The coal will be hauled to the foot of the shaft by electric motors. The mine is to be electrically lighted and equipped with a telephone system and electric mining machinery.

Belleville—A jury in the Circuit Court recently gave a virdict against the Prairie Coal Co. for $5000 in favor of August Weisbrod, a miner whose right hand and arm were crushed in the mine. Weisbrod sued for $10,000. Before the case went to trial an attempt was made without avail to reach a settlement. The verdict for $5000 was the result.

Foreign News

Victoria, B. C.—The Seaboard Wellington Coal Co. will shortly start the development of its mine at Nanoose Bay on Vancouver Island according to its president and general manager G. D. Schofield of Nome, Alaska. About a quarter of a million dollars will be expended in the construction of a colliery. The property was recently purchased from the Universal Investments Co. of Vancouver and comprises 1720 acres of land. The mine will have a capacity of 500 tons per day.

Anchorage, Alaska—Alaska coal resources are likely to come strongly to general attention during the war. Trains over the government railroad have been running regularly for some time to the Matanuska coal fields, where coal mining is already developed on a commercial scale. Shipments to the outside are now expected. Navy Department tests show the coal to be equal to that of Pennsylvania and West Virginia and it is believed here that the Government, instead of transporting coal for naval use on the Pacific clear across the continent, will have it sent down from Alaska. The first mine opened in the district is at Moose Creek 50 miles from Anchorage. A shaft is down 150 ft. to the bed, and present production is 60 tons per day. Another mine is in operation at Moose Creek and recently a third has been opened at Eska Creek, 6 miles northeast of Moose Creek. A number of smaller mines are being worked. Matanuska coal sells in Anchorage for $8 per ton. Before the Government permitted mining, the only coal to be had was that brought from Puget Sound, selling here at $16 to $18 per ton. Orders have been issued for double shifts on the construction of the railroad between Seward and the coal fields.

Personals

George Burgess has succeeded J. G. Teaford as superintendent of mines at Garnsey, Ala.

W. L. Coulson, formerly general manager of the Canadian Collieries (Dunsmuir, Ltd.) is now a member of the mining firm of Butler & Coulson of New York City.

Col. Richard Coulter, of Greensburg, Penn., president of the Keystone Coal and Coke Co., was recently reappointed colonel of the 10th Regiment, Pennsylvania National Guard.

Thomas Ashton, Jr., of Rayland, Ohio, an employee of the Louise Coal Co., has been promoted to superintendent at a new mine being opened by that company at Virginia, a new mining town about two miles from Avella, Penn.

E. P. Stanton resigned his position as traveling freight agent of the Chicago & Northwestern Ry. at New Orleans on June 1, to accept the position of general sales manager for the Lumaghi and the Williamson County coal companies at St. Louis.

James Ashworth, coal mining engineer of Vancouver, B. C., recently completed an investigation for the British Columbia Department of Mines of the causes of the recent explosion at Crows Nest Pass Coal Co. mines at Coal Creek which cost 40 lives.

George W. Clinton has resigned as superintendent of the Comox colliery of the Canadian Collieries on Vancouver Island, after having been employed by the original owners when they sold out to the Canadian Collieries and since by the present owners for the past 30 years.

Elmer K. Hiles, of Pittsburgh, Penn., secretary of the Engineers' Society of Western Pennsylvania, has been appointed captain of Company A, 5th Regiment, United States Engineer Enlisted Reserves. He is now in camp at Oakmont, Penn., with Companies A and B of his regiment.

John S. Collins has tendered his resignation as superintendent of the Ohio Collieries Co., and will become superintendent and manager of the properties of the Beaumont Mining Co., of which he is a stockholder. The company has 500 acres of land at Beaumont, Ohio, with an old shaft which is to be placed in working order. Loading can be started within 90 days. The company has also purchased the output of the Russell Run mine in Meigs County, and is marketing 400 tons a day from this mine.

Industrial News

St. Louis, Mo.—At the annual commencement exercises of the Missouri School of Mines at Rolla, degrees were awarded to 47 students.

Vintondale, Penn.—John M. Galer, chief engineer of the electrical plant of the Vinton Colliery Co., has purchased a large tract of coal land in Union County. Mr. Galer and associates will develop the tract.

Marion, Ill.—Freeman Parks of Marion has sold to Dr. J. S. Lewis of Harrisburg, 717 acres of farm and coal lands in Saline County for $125,000. The property was bought less than 10 years ago for $31,800.

Greensburg, Penn.—Frank Conway, of Connellsville, has purchased 65 acres of the Pittsburgh vein of coal in South Huntington Township, of Westmoreland County, for $19,750. Another new operation will be started shortly.

Philadelphia, Penn.—President Richards of the Philadelphia & Reading Coal and Iron Co., has approved an order increasing the salaries of the clerks in the local offices of the company 10 per cent. beginning with May 1.

Marion Center, Penn.—The Marion Center Coal Mining Co. that recently purchased the Blaisdell mine here has announced that it will build 30 houses for miners. It will electrify the mine and put in all modern mining machinery.

Whitesburg, Ky.—J. K. Parsons, A. F. Parsons, J. W. Montgomery, J. T. Whitaker and others of the Elkhorn By-Product Coal Co., Gorman, have leased the Noah Bentley coal land tract and will begin development work June 1.

Toledo, Ohio—The Buckeye-Elkhorn Coal Co. has been incorporated with a capital of $50,000 to mine and sell coal. The incorporators are: David Armstrong, D. H. Armstrong, J. M. Armstrong, Joseph Armstrong and W. W. Tibbals.

Cleveland, Ohio—The Beaver Coal Co. has been incorporated with a capital of $15,000 to mine and sell coal. The incorporators are: Howard A. Couse, Richard E. Elvidge, Marguerite E. Berry, A. E. Bardwell and S. A. Bardwell.

Lexington, Ky.—The Detroit Elk Coal Co. has increased its capital from $30,000 to $300,000. The increase will enable the company to take over 1450 acres of coal lands in Letcher County. Two operations will be developed on the new holdings at once.

Cleveland, Ohio—The Buckeye and West Virginia Coal Co. has been incorporated with a capital of $125,000 to mine and sell coal. The incorporators are: Charles H. Brown, C. L. Beck, Nicola Di Stefano, Joseph Di Stefano and Leon H. Phillips.

New Philadelphia, Ohio—The Newport Coal and Mining Co. has been incorporated with a capital of $30,000 to mine and sell coal. The incorporators are: R. W. Rutledge, C. G. Knisely, W. W. Wilkinson, Freeman Wilkinson and Mabel Wilkinson.

Harlan, Ky.—The Kitt's Creek Coal Co., recently organized here, has increased its capital

stock and will develop coal lands on the new line of the Seagraves branch road, being rapidly constructed from Seagraves to Kilday, opening up a rich coal field.

Dover, Del.—The Property Owners Mutual Coal Co. has been incorporated with capital of $1,500,000 to develop and operate coal mining properties. The incorporators are: Herbert E. Latter. C. L. Rimlinger, Wilmington, and Clement M. Egner, Elkton, Md.

Greensburg, Penn.—The property of the Scottdale Coal & Coke Co. consisting of about 130 acres of coal lands in Hempfield Township, has been acquired by F. B. Cook, Johnstown. It is said that the new owner is planning for early operation of the properties.

Louisville, Ky.—Giving as its reason the desire to conserve fuel coal, besides clearing the tracks for expeditious movement of other traffic, the Southern Railway has applied to the Kentucky Railroad Commission for permission to discontinue certain passenger trains.

Hastings, Penn.—The Oak Ridge Coal Co., owning several mines in this vicinity, has begun work on the opening of two new operations near here. The new mines will give employment to 300 men and the present production of the company will be doubled.

Herrin, Ill.—The Herrin Coal Sales Co. has been organized here by Frank A. Martin, recently chief clerk for the properties of the Taylor Coal Co. The new company will handle the surplus tonnage of a large number of mines in the Williamson and Franklin County field.

Williamson, W. Va.—The Warbride Mining Co. has filed articles of incorporation with a capital of $100,000, to operate in Mingo County. The incorporators are Wells Goodykoontz, Harry Scharr, L. G. Bray, B. Randolph Bias and G. R. C. Wiles, all of Williamson.

Clarksburg, W. Va.—The Hart Brothers' Co. is building a railroad to its tract of about 14,000 acres of coal property at Hartland, Clay County. It is said that nine leases have been taken on this land, and that the minimum production on each will be about 120,000 tons of coal per year.

Pineville, Ky.—The Standard-Straight Creek Coal Co. is the latest to be organized here. The incorporators are: W. S. Bates, C. M. Preston and H. L. Gory, with a capital of $10,000. Development of coal lands along the Louisville & Nashville R.R. in Bell County will be made.

Cincinnati, Ohio—Several creditors of the steamer "J. R. Ware," including the West Kentucky Coal Co., the Campbell Creek Coal Co. and others, have filed libels against it in the United States District Court for the satisfaction of their claims. The hearing will be held on June 5.

Chicago, Ill.—The Link-Belt Co. has had printed in colors a portion of President Wilson's proclamation, which it feels is of particular interest to manufacturers at the present time. This company will be glad to send one of these hangers to any one who will make request to the Chicago plant.

Harlan, Ky.—Bell-Harlan Coal Mining Co. has been organized in Harlan County by A. M. Gregory, E. N. Ingram and R. N. Patterson, with a capital of $10,000. The new company will develop holdings on the new Seagraves branch of the Louisville & Nashville R.R., starting work within a few days.

Elys, Ky.—The Kanawha-Knox Coal Co. organized here this week with $50,000 by J. H. Martin, E. H. Hutcheson and J. B. Hutcheson, announces the beginning of a coal development June 1. The incorporators plan a daily output of from 700 to 800 tons to start with. J. H. Martin will be manager.

Pittsburgh, Penn.—The Lincoln Coal Gas Co. has acquired a tract of about 1950 acres of coal lands in North and South Franklin, Canton and Buffalo townships at a total cost of about $500,000. The company is planning for early operations on the property, which has heretofore been owned by Richard W. Dawson.

Hazard, Ky.—The Whitley-Elkhorn Coal Co., recently organized at Williamsburg for a development at Sergent in the Letcher County field, has leased properties on the L. & N., near Hazard, and will begin work immediately. A. T. Siler, J. M. Freeman, Judge B. F. Rose, J. G. Gault and others are incorporators.

Philadelphia, Penn.—Two special agents of the Federal Trade Commission have arrived in this city to conduct an investigation as to the price and distribution of coal in this territory. The men held a conference with U. S. District Attorney Kane, who stated that prosecutions would be ordered if sufficient evidence to warrant it is discovered.

Tamaroa, Ill.—The Paradise & Franklin County Coal Co. has acquired by purchase and lease about 4500 acres of coal lands north of this place and will immediately sink a shaft. It is expected that the company will be taking out coal this fall. George W. Dowell is president of the company and Cicero Barber is secretary. Offices have been opened at Duquoin.

Athens, Ohio—John S. Jones, of Chicago, and Receiver John H. Winder, of the Sunday Creek Coal Co., are handling arrangements for the construction of a branch road up the Sunday Creek Valley, connecting with the Baltimore & Ohio near Grosvenor. The proposed line will tap large holdings of the Sunday Creek company, and will give better loading facilities to openings already made.

Memphis, Tenn.—Announcement of the possibility that the Pittsburgh Coal Co. and the West Kentucky Coal Co. will possibly not make deliveries of river coal to Memphis this fall is beginning to cause apprehension among the authorities and residents of the city. There is some discussion of an attempt to utilize the timber which farmers across the river in Arkansas are burning to clear their lands, while an appeal to the Government is also suggested.

New York, N. Y.—The Charles A. Schieren Co., New York, has recently opened branch offices at 72 Congress St., West Detroit; 18 So. Broadway, St. Louis; 475 So. Main St., Memphis; 272 Marietta St., Atlanta, in addition to those already established at New Orleans, Dallas, Boston, Philadelphia, Pittsburgh, Chicago, Denver and Seattle. These, with jobber representation in all the principal industrial centers, give further assurance of prompt service to users of Duxbak belting.

Hazleton, Penn.—The Cranberry Colliery at Hazleton, acquired from A. Pardee & Co. by the Lehigh Coal and Navigation Co. on July 1, 1916, has been transferred to the Cranberry Creek Coal Co. and will in future be operated by that company. The operating officers of the Cranberry Creek Coal Co. are as follows:—Edwin Ludlow, president, Lansford, Penn.; H. M. Crankshaw, manager, Hazleton, Penn.; E. Hughes, purchasing agent, 437 Chestnut St., Philadelphia, Penn.

Jefferson City, Mo.—Provisions of the Missouri statutes of 1909, prohibiting the railroads from fixing higher freight rates for a short than a long haul, whether such rate discrimination is just or unjust, were recently sustained as constitutional by the United States Supreme Court. Decisions of Missouri courts, upholding the short haul clause and a verdict of $16,504 for overcharges and penalties in favor of the McGrew Coal Co. of Lafayette County against the Missouri Pacific R.R. were affirmed.

Buffalo, N. Y.—The Donner-Union Coke Corporation of this city has filed papers of incorporation and will build on a 50-acre site on Buffalo River in the city and adjoining the Donner steel plant a $3,000,000 byproduct coke-oven plant. The directors are W. H. Donner, president of the Donner Steel Co.; Frank B. Baird, president of the Buffalo Union Furnace Co.; Harry Yates, first vice-president of the same company, and F. C. Slee. The plan is to build at least 120 byproduct ovens, the gas and coke to be used mainly in the two iron plants.

Scotdale, Penn.—Announcement was made on May 25, of the sale of the controlling interest in the Indian Creek Valley Railroad Co. to D. B. Zimmerman, prominent coal operator of Somerset County, for $640,000. The sale was made by Harold L. Robinson and J. M. Stuffer, who transferred 1400 shares to stock to Mr. Zimmerman. The company operates a railroad and coal mines in Fayette County. Mr. Zimmerman is allied with the Mellen interests in Pittsburgh, and it is intimated that the railroad was purchased for the Baltimore & Ohio. A large coal area in northern Fayette County is touched by the lines.

Columbus, Ohio—The Cambria-Hocking Coal Co. has been incorporated with a preliminary capital of $10,000 to open new mines on an acreage near Nelsonville, which was formerly a portion of the property of Mine No. 207 of the Sunday Creek Co. The incorporators are J. A. Rogers, J. A. Jones, H. E. Lancaster, F. E. Falk and Bryon Phillips. J. A. Jones, of Nelsonville, is president; H. E. Lancaster, Nelsonville, vice-president, and J. A. Rogers, of Columbus, secretary-treasurer. The property consists of more than 100 acres in the No. 6 seam. The output will be sold through offices to be established in Columbus.

Birmingham, Ala.—H. E. Hutchens, representing the car service commission of the American Railway Association in this district, has named the following assistants on his committee, which will supervise the handling and distribution of railway equipment: T. E Brooks, superintendent, Louisville & Nashville R.R.; A. W. Cary, traffic manager, Birmingham Southern; E. F. Stovall, general agent, Illinois Central and Central of Georgia railways, and J. H. Doughty, general agent of the Frisco and general manager of the Birmingham Belt R.R. A meeting of this committee has been called, which will be attended by high officials of every line in this district, and it is hoped that some means will be found to relieve the tense car situation.

St. Louis, Mo.—The Government has turned over to James E. Smith of St. Louis, president of the Mississippi Valley Waterways Association, 2 tow boats and 12 barges to be used in solving the coal problem for the North and Northwest and for the relief of railroad congestion. The equipment will be put into service on the Mississippi River between St. Louis and St. Paul. They will carry coal to St. Paul and intermediate points. From St. Paul and Minneapolis distribution will be made by rail through the Northwest. All privately owned equipment not in use is being listed with a view to its use in the same service. On return trips the barges will bring iron ore to St. Louis. The ore will be carried from Lake Superior to St. Paul by rail and there turned over to the barges. As the ore can be brought to St. Louis by this route at a freight rate $1 per ton cheaper than the rate to Pittsburg, it is believed that steel industries will be built up here, with incidental benefit to the coal industry.

St. Louis, Mo.—A victory of far-reaching importance to the coal mining industry was won in the United States Supreme Court recently when the court dissolved an injunction secured against the Interstate Commerce Commission by the Illinois Central R.R. restraining the commission from proceeding to fix damages in behalf of coal companies of the Belleville district for financial loss through failure of the railroad company to furnish a sufficient number of cars to keep the mines in operation. The plaintiffs in the original proceeding were the Groom Coal Co. of Belleville, the Vulcan Coal Mining Co. and the St. Louis & Coulterville Coal Co. of St. Louis. They complained to the Interstate Commerce Commission, which ruled that the railroad company was liable for failure to furnish cars. The Commerce body set a time for a hearing to determine the amount of damages. The Illinois Central secured an injunction in the United States Court at Danville restraining the Commission from holding the hearing. The dissolution of the injunction by the Supreme Court leaves the assessment of damages in the hands of the Commerce body.

Chicago, Ill.—The Link-Belt Co. has sold to the Pennsylvania Coal and Coke Corporation, two 201 ft. longwall conveyors to be used in connection with the longwall mining system now being inaugurated at its colliery No. 9 near Cresson, Penn. It has also sold three of these machines, each 300 ft. long, to the Riverside Coal Mining Co., for use in the mines at South Fork, Penn., and one 250 ft. long, to the Georges' Creek-Parker Coal Co. of Frostburg, Md., for use at its mine at Barrelville, Md. These longwall conveyors are specially designed for use in thin seams, where the vertical space (in some cases only 28 in.) is so limited that it is difficult to remove the coal in any other way to the cars in the entry. The conveyor is made up in detachable sections, for varying the length to suit the conditions, and is driven by an electric motor mounted on the first section, the conveying medium being a wide malleable iron link-belt moving slowly along the bottom of a steel plate trough. It furnishes capacity for carrying the coal away as fast as the men can deliver it to the conveyor, and successfully solves what was originally a serious problem in connection with longwall mining.

Birmingham, Ala.—At a recent meeting of the coal men named by Erskine Ramsay, southern member of the subcommittee of the Council of National Defense, to supervise coal production and distribution, Morris W. Bush, of Birmingham, and G. F. Peter, of Maylene, Ala., were appointed chairman and vice-chairman respectively, for Alabama; Jas. L. Davidson, secretary; E. L. Hampton, Tracy City, Tenn., chairman subcommittee for Middle Tennessee and Georgia; E. C. Mahan, Knoxville, chairman of subcommittee to supervise the work in southern Kentucky and East Tennessee. Another meeting of the committee will be held in this city when the several district chairmen have acquainted themselves with the conditions in their respective territory and the nature of remedial measures necessary to bring about an increased production of coal, coke, etc., and expedite deliveries. Morris Bush, Alabama, chairman, appointed the following local coal and iron men to membership on his committee: Henry T. DeBardeleben, DeBardeleben Coal Co. and Alabama Fuel and Iron Co.; Edgar L. Adler, Birmingham Fuel Co. and Corona Coal and Iron Co., J. W. McQueen, Sloss-Sheffield Steel and Iron Co.

St. Louis, Mo.—P. H. Sauter of Mascoutah, Ill., and M. S. Fuqua of St. Louis have purchased three-fifths of the stock of the Kolb Coal Co., with two mines at Mascoutah and two at New Athens, Ill., and offices in St. Louis. The price paid was $210,000. Neither has been in the coal business before. They have bought as an investment and will not take an active part in the business. Reorganization has been effected by the election of the following officers: President, E. R. Hagist, re-elected; vice president, P. H. Sauter; secretary, M. S. Fuqua; treasurer, Henry Hucke, re-elected; general manager, Phillip M. Hucke. The latter was formerly treasurer. Otto Klingenfus of Belleville is out of the company, having sold his interest for $70,000. He was formerly superintendent. The connection of Mine Manager Mann has also terminated.

The different coal operators associations here have been advised from Washington that the Supreme Court has decided that the Interstate Commerce Commission has power to compel railroads to furnish "a reasonably adequate" supply of coal cars to handle "normal and seasonal" demands for Interstate Commerce, originating at mines along their line and to award damages to shippers for failure to supply such cars.

Market Department

GENERAL REVIEW

Easier tone in anthracite though supplies are still short. Bituminous market irregular. Base price on Pittsburgh Lake contracts fixed at $4.50. Middle Western conditions mixed and hinging largely on transportation conditions.

Anthracite—Supplies continue as short as ever, but there is a growing confidence in the belief that the producers will be able to largely make up the deficiency during the summer, with the result that there is a notable absence of the recent acute tension. Prices are also somewhat easier generally, but there has been a brisk buying on the decline, which has had a stiffening tendency. Reports that the shipments of the mining companies are already beginning to show very heavy increases are undoubtedly true, but on the other hand these increases are due very largely, if not wholly, to extra tonnages of the steam sizes washed out of the culm banks, and are therefore not a factor in the domestic trade. Never before has there been such a complete absence of uniformity in retail prices, which is due of course to the generally irregular prices the dealers are paying for their coal. Price cutting has of course entirely disappeared while most of the dealers have practically abandoned hope of being able to accumulate any reserves during the coming summer or at any rate their usual quotas. We know positively of a number of companies that have their entire production covered up to the middle of August, and buyers are uniformly waiving questions as to quality, grade, and so on.

Bituminous—The market is irregular, but somewhat easier than a week ago, while there is a feeling that a plentiful car supply would bring about further recessions. On the other hand, the recent extraordinary wage increases, together with advances in cost of all kinds have so increased the cost of production that it is difficult to see how the decline can extend to any important proportion. While there has been no slowing up in consumption or in orders, selling agencies are at the same time encountering new difficulties, due to a more cautious attitude on the part of the buyers who are beginning to anticipate important recessions from the ruling high levels. The movement on contracts has improved somewhat, though it is generally still behind. Government requisitions continue very heavy, while Coastwise movement has improved, and supplies at tidewater docks are at a minimum. Expedients of all kinds are resorted to expedite the loading of cargoes.

Lake Trade—Scarcity of vessels and delays from heavy ice are holding up Lake shipments. Vessels are scarce but the rail situation is being well handled, coal being sent forward when any vessels are available. As a result of this condition, there has been more tonnage available for local requirements than was expected and prices are easier. The fixing of prices on Lake coal contracts in the Pittsburgh district at $4.50 per ton has been fairly well established, and it is probable that most of the agreements entered into early in the season with the price left open will be arranged on these terms. There are apparently more cars available in certain districts, though this is rather erratic even there, so that the relief is not sufficient to be reassuring. Shippers are greatly worried over the car supply outlook and fully expect a severe congestion at terminal points more or less all summer. The removal of embargoes against shipments from some of the Southern districts to points north of the Ohio River has had a beneficial effect on the market.

Middle West—The uncertainties in transportation and embargoes against shipments in certain directions have created a very mixed situation in this section. Prices in districts where the movement is free have shown a softening tendency, while those in other sections have stiffened up still further. There is less urgency in the demand from industrial concerns, with the result that steam prices have eased off to approximately the same level as the domestic grades. Orders for the latter have been unexpectedly persistent, due to the long protracted cool weather. There are slow shipments by the Lakes to ports on lower Lake Michigan, which have made it necessary for these to continue buying Middle Western coal and this has also been a factor in the situation. Car supply fails to show any material improvement, and the market hinges very largely on this point.

A Year Ago—Anthracite circulars subject to much cutting. Bituminous quiet but with continued good outlook. Labor disturbances in the Pittsburgh district assuming alarming proportions. Middle Western market steady, particularly on the steam grades.

Comparative Average Coal Prices

The following table gives the range of mine prices in car lots per gross ton (except where otherwise noted) on 12 representative bituminous coals over the past several weeks and the average price of the whole group for each week:

Boston	Year Ago	June 2	May 26
Clearfields	*$1.05@1.55	$5.50@6.25	$5.75@6.50
Cambrias and Somersets	* 1.35@1.75	5.75@6.50	6.00@6.75
Pocah. and New River[1]	* 2.70@2.80	7.50@8.50	7.50@8.00
Philadelphia			
Georges Creek (Big Vein)	1.90@2.00	6.50@6.75	6.75@7.00
W. Va. Freeport	1.15@1.25	5.50@5.75	6.00@6.25
Fairmont Gas mine-run	1.35@1.45	5.75@6.00	6.25@6.50
Pittsburgh (steam coal)[2]			
Mine-run	† 1.60@1.75	4.75@5.00	4.75@5.00
¾-in.	† 1.60@1.75	4.75@5.00	4.75@5.00
Slack	† 1.45@1.55	4.75@5.00	4.75@5.00
Chicago (Williamson and Franklin Co.)[2]			
Lump	1.35@1.45	3.25@3.75	3.25@3.75
Mine-run	1.20@1.30	3.00@3.50	2.75@3.50
Screenings	* .95@1.00	3.00@3.50	2.75@3.75
Gross average[3]	$1.47@1.63	$5.00@5.46	$5.10@5.58

	Gross Averages 1917	1916
Jan. 20	$4.54@4.98	$2.04@2.20
Jan. 27	4.64@5.03	1.99@2.16
Feb. 3	4.66@4.86	1.94@2.10
Feb. 10	4.70@4.95	1.73@1.91
Feb. 17	4.67@5.04	1.71@1.90
Feb. 24	4.95@5.29	1.64@1.84
Mar. 3	5.10@5.48	1.56@1.74
Mar. 10	5.36@5.61	1.53@1.68
Mar. 17	4.80@5.19	1.46@1.65
Mar. 24	4.64@4.94	1.49@1.66
Mar. 31	4.20@4.44	1.46@1.61
Apr. 7	4.07@4.36	1.44@1.60
Apr. 14	4.01@4.35	1.45@1.61
Apr. 21	3.83@4.14	1.46@1.62
Apr. 28	3.81@4.12	1.45@1.62
May 5	4.04@4.40	1.45@1.59
May 12	4.64@4.98	1.44@1.59
May 19	5.08@5.54	1.42@1.56

[1] F. o. b. Norfolk and Newport News. [2] Per net ton. [3] The highest average price made last year was $4.80@5.33 made on Nov. 25. * Price lower than the week before. † Price higher than the previous week.

BUSINESS OPINIONS

Bradstreet—Distributive trade lags under checkreins imposed by inordinately high prices, particularly of food, unseasonably cool weather and the practice of economy, but the country's leading industries, confronted as they are by demands that seem insatiable, proceed to new high ground, while the crop situation has taken on a better color and the stock market reflects more confident optimism. Moreover, evidence developing from day to day indicates that the industries, instead of getting a respite from overwhelming activity, will undergo further straining to care for the needs of war. The iron, steel, textiles, fuel, lumber, shipbuilding and machinery trades loom large in point of activity, with the signs pointing to even greater pressure. Under the circumstances pay rolls are of record proportions, unskilled labor, except in the building lines, is scarce, and in the general field of labor there is a further yearning for higher wages.

Dun—Both business and agriculture have made further responses to improved weather in many sections, and renewed strength has replaced the recent depression in securities. The more confident sentiment in financial circles, though directly due to other causes, is made possible by the stability of trade and industry during a period of readjustment, and the absence of monetary disturbance is likewise a reassuring factor. Commercial failures this week are 314, against 298 last week, 276 the preceding week and 314 the corresponding week last year.

Dry Goods Economist—The question of how much of a certain kind of merchandise can be obtained and when delivery will be made is more of a factor in the dry goods market today than the extent of the buying which is being done. In most lines the situation may be described as one of "marking time." In few lines is demand particularly active. The participation of this country in the war, the prevalence of cool weather over a large section of the country, unwise talk of economy, and uncertainty as to the possible effect of the "draft" law, are charged with responsibility for this condition. Many, however, put the onus almost entirely on the weather.

American Wool and Cotton Reporter—Widening of the demand for Government requirements was the feature of the wool market during the week under review. South American wools continue to be prominent in the quantity of sales made. Medium grades are much in demand. Prices are firm and advancing. In the West the situation is still very strong and it is expected that prices will go higher.

CURRENT EVENTS

Production—Bituminous shipments over the Reading R.R. for March amounted to 1,799,200 tons, the heaviest shipments ever made with the exception of December, 1915, when 1,828,889 tons were shipped.

Fuel shipments over the Pennsylvania Railroad for April amounted to 6¼ million tons, showing an increase of nearly half a million tons over the preceding month, but shipments for the quarter year amounted to only about 25 million tons, or more than half a million tons behind the figures for a year ago. Bituminous shipments are running ahead of the figures of a year ago, but anthracite and coke, especially the latter, are very much behind.

Transportation Notes—The net shortage of cars on all the railroad lines on May 1 amounted to 145,449, an increase of 652 over the deficiency existing a month ago. This is the greatest shortage that his existed since the beginning of the present difficulty last September.

Steel Production—The gross production of steel ingots and castings in the United States in 1916 was 42,773,680 gross tons, which compares with the previous record in 1915 of 32,151,036 tons and with 23,513,030 tons in 1914.

Labor—At the end of last week John P. White, President of the United Mine Workers of America made public a strong protest, which he has sent to President Wilson and the Council of National Defense, against the placing of such broad powers in the hands of the Committee on Coal Production. Mr. White takes the position that the personnel of the committee has been found uniformly antagonistic to the labor interests, and says in this connection: "It would be most bitterly ironical and most dangerous to overthrow now the splendid and enduring peace which the mine workers and the great body of mine owners have attained in order merely to place such men in dictatorships."

The Convention of the Central Pennsylvania Miners, after accepting the agreement made at Washington, drafted a brief to Secretary of Labor Wilson, to the effect that this was only done under protest and urging that a Federal investigation of the car pushing terms be made.

Ocean Shipping—Allied shipping, aggregating approximately 90,000 tons, which has been tied up in the Gulf of Bothnia since the beginning of the war, will soon be released as the result of an agreement between Great Britain and Sweden, effected on May 9.

On May 6 the Panama Canal terminals at Cristobal and Balboa were closed to shipping between sunset and sunrise, all lights being extinguished.

Legislative—An important bill was introduced in the House of Representatives on May 25, prohibiting trading with the enemy or his allies and also providing for the utilization of patents held by enemy patentees.

National Coal Board—In another one of its periodical statements, issued under date of May 26, the Board very strongly urges economy in consumption, stating: "A pound of coal that many citizens might save today may forge the shells that would bring an early decision in the war and save thousands of lives."

Foreign Markets—The French Food Minister, M. Violette, is quoted in a despatch to the New York "Times" under date of May 25 as follows: "France needs every month to keep the factories going and for domestic consumption 5,000,000 tons of coal. Her actual output is 2,300,000 tons and she can count on importing 1,400,000 tons, making a total of less than 4,000,000 tons. So we need an extra million tons monthly and we hope that America will provide that."

All persons in France having more than one ton of coal will be required to report the amount they have before June 20. All coal stocks not reported will be subject to requisition. The purpose of the decree is to prevent the laying in of large stocks for the winter, to the detriment of those who are unable to buy in advance. Dealing in coal, except through licensed merchants, will be prohibited.

Atlantic Seaboard

BOSTON

Shortage unrelieved at Hampton Roads. Spot prices high, but practically no coal offering. Alongside market inactive, and inquiry inland is light. Prospects improve on all-rail movement, due to curtailment of passenger traffic. Anthracite receipts meagre.

Bituminous—The situation of Pocahontas and New River f.o.b. loading ports shows no improvement. While spot quotations are high, as high as $8.50 for small lots, there is very little coal available. Government requisitions are heavy and all the agencies are put to it to load the bottoms that report periodically for contract deliveries. Coastwise shipping has made generally better trips the past fortnight and a better volume of coal is therefore moving to this territory. Dispatch is slow, however, and all kinds of expedients are resorted to in the effort to put cargoes afloat.

Contract shipments to this territory are enough better so that buyers have still further relaxed their interest in speculative cargoes. Then, too, the supply all-rail is improving slightly. It is not so much what has been already accomplished in this direction as the prospect for the next few months. There is such a well-defined opinion that conditions are going to be less difficult that the market in the vicinity of Boston will be dull probably for a considerable period. On the other hand, the emergency purchaser finds it just as hard to find a free cargo as at any time since January. What let-up there has been to the market has been due largely to reduced consumption, good water power for many of the mills and the approach of warm weather having their influence.

The Boston & Maine R.R. has announced a drastic cut in passenger service, more than 300 branch and local trains being cancelled, and it is understood that the other New England railroads will follow suit. Conferences are also being held with a view to pooling coals at various loading ports, at least for the railroads, thereby accomplishing for this section what has already been attempted for the Lakes.

The demand inland is still confined to small emergency shipments. Prices have not receded, largely because so little water coal is offering at the re-handling points. Distributors are apprehensive that water shipments may at any time be materially reduced and are disinclined to sell spot coal even at the prices now ruling.

Georges Creek offerings have again disappeared, deliveries being only scattering on prior obligations. Apparently none of this grade is available to New England f.o.b. Baltimore, Philadelphia or New York.

Quotations on the Pennsylvania grades are somewhat easier than a week ago. Buying is much less insistent than a week ago. Consumers, if under contract, are waiting to see if sales agencies will show signs of making good on their commitments; others are hoping prices will recede enough to permit comprehensive purchases.

Rumors of Government activity on behalf of various plants are again heard and they certainly have a bearing on the current market. In the main, however, only a small tonnage of the grades now coming to this territory is to be had on current prices. The coals now offering are mostly the high volatiles attracted by the active demand that has hitherto prevailed.

The coal trade of New England, acting in conjunction with the trade in other sections has definitely undertaken to raise $45,000 to furnish, equip, and maintain a section of an ambulance corps in France. A meeting was held in the office of Mr. Robert Grant, President of the New England Coal & Coke Co., on May 25, and during the next month several coal salesmen will become active canvassers for funds. It is said that $20,000 has already been subscribed.

Bituminous at wholesale is quoted about as follows, f.o.b. loading ports at points designated, per gross ton:

	Clearfields	Camb. and Somersets
Philadelphia	$6.75@7.50	$7.00@7.75
New York	7.00@7.80	7.30@8.10
F. o. b. mines	5.50@6.25	5.75@6.50
Alongside Boston (water coal)	10.75@11.25	11.00@11.50

Pocahontas and New River are now quoted at $7.50@8.50, f.o.b. Norfolk or Newport News, Va., for spot coal, and $12@13 at Providence and Boston for inland delivery.

Anthracite—The companies are making deliveries steadily, but the tonnage is relatively light. Receipts of domestic sizes on circular prices are small and retailers are kept constantly on the anxious seat. The disquieting feature is that the average dealer finds his receipts well in arrears now of what they were a year ago.

The "independent" shippers are not only reluctant about offering coal at the moment, but inquiries meet with discouraging replies. Many of the factors who were quite active a month ago are now scarcely heard from. This inactivity is naturally attributed to the recent efforts of the Federal Trade Commission. There is an opinion here that not more than one commission is to be permitted from producer to retail distributor. Certain it is that less "independent" coal is coming forward whether by water or all-rail. Dealers who were depending upon an occasional premium cargo to keep them in business now find it very difficult to arrange for shipments.

The state authorities held a conference here with the local retailers on May 29 but beyond talk of coöperation in the interest of the public there were no developments.

NEW YORK

Anthracite conditions easier, but stocks continue low. Prices for independent coals show much variation. Buyers less urgent. Soft coal operators complain of the scarcity of labor and cars. Production low but buyers are holding back expecting lower prices.

Anthracite—Conditions at Tidewater are easier and while demand is strong there has been a falling off in prices. Buying was brisk on the decline and free coals were quickly absorbed owing to it being the end of the month and there was an opportunity to save 10c. per ton on the domestic coals if prompt shipments could be promised.

Middlemen without good connections continue to find it difficult to obtain the domestic coals in large quantities. While the circular of the various companies show a variety of prices the independent quotations are much more varied. Few quotations for Tidewater shipments of domestic coals have been obtainable, due to the scarcity, but those heard were on a basis of from 50c. to 60c. higher than the company's circular.

There does not appear to be the urgency for shipments that existed up to a week or ten days ago. Although dealers' stocks are low and there are inland yards without any coal; but few dealers have a supply of all sizes and they do not seem over-anxious to fill their bins with anything but coal obtained at the regular company circular. Retail dealers are not trying to deliver complete orders, many sending one or two tons at a time instead of the usual three to five tons. There is a distinct feeling that coal will be plentiful within the next few weeks, although labor is scarce at the mines.

Stocks of both company and independent products are low and Tidewater receipts are small. The mines are working well and production the last half of the month was better than during the early part.

The steam situation shows some improvement. Stocks are larger but there is very little surplus on hand and receipts are quickly absorbed.

Exports of anthracite from this port for April amounted to 8339 tons, valued at $53.106. Of this amount 6905 tons went to Canadian points.

Current quotations, per gross tons, f.o.b. Tidewater, at the lower ports are as follows:

	Circular	Individual
Broken	$5.30@5.45	.....
Egg	5.30@5.45	.....
Stove	5.55@5.70	.....
Chestnut	5.60@5.75	.....
Pea	4.00@4.45	$6.00@6.25
Buck	4.00@4.15	5.75@6.00
Rice	3.40@4.05	4.00@4.25
Barley	2.90@3.10	3.00@3.25

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—Contract coals are moving freely at Tidewater but they are far behind requirements and this has a tendency to limit the quantity available for spot buyers, keeping prices stiff, although slightly lower than a week ago.

The acceptance by the mine workers in the Central Pennsylvania fields of the new wage agreement adopted at the Philadelphia conference, by which they are to receive an average increase of 25%, plus 5c. increase for car pushing, has not resulted in better production so far. Several mines located in the Somerset region have been idle because of labor difficulties and they have contributed to the short supply of coal.

Car supply has been extremely bad although improvement has been noted along the Pennsylvania road. Last week operators reported about a 50% supply, a slight change for the better as compared with the previous week when the supply ranged from 35 to 40%. The mines along the Baltimore & Ohio did not fare so well.

A meeting of operators with Federal representatives was scheduled for Thursday of this week, at which it is expected the matter of pooling facilities at the Atlantic tidewater ports would be discussed.

Many industrial plants have hardly more than a couple of days' supply ahead and it is believed they are holding back, expecting that the Federal authorities will soon fix prices lower than those now existing.

During the month of April only 171 tons of bituminous coal valued at $1774 were exported from this port. Of this amount 70 tons went to Cuba and 101 to Chile.

Current quotations, per gross ton, f.o.b. Tidewater, for various grades are as follows:

	Port Reading	South Amboy	Mine Price
George Crk.			
Big Vein	$7.50@7.75	$7.50@7.75	$6.00@6.25
Tyson	7.25@7.35	7.25@7.35	5.50@5.75
Clearfield	7.00@7.25	7.00@7.25	5.50@5.75
South Frk	.....	7.50@7.75	6.00@6.25
Nanty Glo	.....	7.50@7.60	6.00@6.25
Som'r. Co	7.15@7.25	7.15@7.25	5.50@5.75
Que'ho'ing	7.25@7.50	7.25@7.50	6.00@6.25
W. V. Fa'rm't			
Th'r'qua	7.00@7.25	7.00@7.25	5.25@5.50
Mine-run	7.00@7.25	7.00@7.25	5.25@5.50
West. Md.	7.00@7.25	7.00@7.25	5.25@5.50

PHILADELPHIA

Anthracite situation continues to quiet down, though demand is still excessive. Storage orders now being filled. Trade commission making its impress. No uniform retail prices. Bituminous prices continue downward movement. Further changes depend on car supply. Slack coal in heavy demand and high in price.

Anthracite—The situation here continues to assume a more peaceful tone, and the dealers' faith in their shippers is growing steadily stronger. This increasing optimism is not at all due to the arrival of more coal, as most dealers are apparently fighting as hard as ever for tonnage, but with the arrival of more seasonable weather very little of it is now needed for immediate use. Their stocks are extremely low and their requirements excessive, but they are accepting the assurances of the shippers that their necessities will be cared for before the end of summer. Naturally, though, they are anxious to fill as many orders as possible before the maximum circulars of the companies are put in effect.

Most dealers claim they are only receiving sufficient coal to care for their transient trade, but it is known they have made some slight progress toward filling cellars for next winter's consumption, and it is expected that this work will go on quite rapidly now that the demand for current consumption is about over. The greatest pressure upon the retail men is from those who usually close their town houses on June 1 and are anxious to have the assurance of their next winter's supply before they leave the city.

Coal is put out as fast as it arrives and most of the yards are still down to the boards at all times, with no choice as to the sizes for the customer who needs fuel for current consumption. The largest mining company claims they have shipped more coal here since Apr. 1 than during corresponding periods of other years and at least one other company is making similar claims. But with the abnormal demand for steam coal it is likely that that much of this excess tonnage was due to these sizes. The excessive demand for steam coal has prompted the building of extensive washeries that have been taking thousands of tons of steam sizes out of the culm banks and even other large washeries are still in the course of erection with the same object in view. It would also be interesting to know the tonnage of pea coal that has been diverted from the retail dealers for manufacturing purposes. On account of pea coal contracts with steam users some of the smaller companies are now intimating to their dealer trade that they cannot hope to receive much of this size for at least a year or more.

The individual shippers are now sending a greater proportion of their production to this market and while their prices remain 10c. to 45c. above the companies, it is all eagerly sought and the question of price is rarely mentioned. Many of the dealers who are now receiving heavier shipments of this kind do not seem to realize that it is because of the activities of the Federal Trade Commission, but take it as an omen of better times ahead and think the demand must be falling off in other markets. At least this quieting effect is a good feature. To those well acquainted there is not the least doubt of the influence of this Government body on the trade. Two of the commissions' representatives arrived here this week and it is understood their stay will be indefinite.

Owing to the varying wholesale prices which the retailers are paying for their coal, they are in a quandry as to how to make their charges. When they used to purchase an occasional car of premium coal they simply absorbed the difference, but now as this variation is to continue indefinitely, they must arbitrarily fix a retail price to cover the various premiums they have to pay. As a matter of fact, there is less uniformity in retail prices now than there has been for many years. At this writing a fair average would be $8.25 for egg, $8.50 stove, $8.75 chestnut and $6.50 pea. We know of a number who are getting 25c. more and a few that much less, and the only price cutter receiving any coal now is selling pea at $6.25, but the figures quoted are a good average.

Due partly to embargoes the dealers located on the lines of the Reading Ry. are receiving much better attention than those along the Pennsylvania. Dealers who are compelled to depend on the Lehigh Valley and Susquehanna companies appear to be the greatest sufferers and their yards have been empty most of the time for the past month.

All the big companies express their confidence of obtaining a large production during the entire summer and we know that some of the smaller companies are now breaking records, but there will undoubtedly be an absence of price cutting and little use for storage yards this summer. Even now most dealers have abandoned the idea of storing pea and will utilize the space formerly devoted to that size for any surplus of the larger domestic sizes they may be able to get.

There will certainly be no idle days at the collieries for the want of orders, and the operators are bending every energy to induce the men to keep steadily at work and forego the usual holidays. We know of several large concerns who cannot possibly catch up on all their orders before the middle of August. The dealers will not stop buying while they have any storage space available and none except to stock to their usual capacity, let alone enlarging their yards as many had contemplated the past winter.

The local demand still centers on stove and pea coal; the latter size in particular fails to show improvement. Egg and chestnut are easier but there is no surplus. Labor difficulties continue to hamper prompt shipments from the piers, while the retailers are finding yard help scarce, with the available labor of an inferior quality and the wages high.

The time was when a shipment was expected from the Lehigh region that it would be nothing short of criminal to ship from the very free-burning Shamokin district, but now dealers eagerly seize upon the opportunity to secure even the higher priced special grades of some of the larger shipping companies. It is obviously no time for any man to express his likes and dislikes.

There has not been the least change in the demand for steam coals; if anything, the situation has grown more tense with the high rates for bituminous coal still being asked and it is quite an economy for any consumer who can obtain anthracite steam coal at even the highest quotation for an occasional car from the larger mining companies.

The prices per gross ton, f.o.b. cars at mines for line shipment, and f.o.b. Port Richmond for Tide shipment, are as follows:

	Line	Tide		Line	Tide
Broken	$5.00	$6.15	Buck	$2.90	$3.80
Egg	4.15	5.25	Rice	2.40	3.40
Stove	4.40	5.60	Boiler	2.20	3.30
Nut	4.50	5.55	Barley	1.90	2.15
Pea	3.10	4.00			

Bituminous—There has been a continuation of the slight downward movement of prices, which was in evidence last week to a limited extent. So far the changes have not been very large, averaging a little over 25c. a ton, although some reductions have been as much as 50c. and 75c. a ton; these latter changes, however, have been the exception. At the present moment the entire movement seems to center around the car supply situation and seems to be the general opinion if a fair supply of cars can be received that further light recessions will be in order. While the number of cars received has been somewhat better, it is still far from satisfactory.

Owing to the combination of a car shortage and the heavy demand for slack from the West Virginia fields this coal is now bringing higher prices than the mine-run of the same district, as the operators are unable to screen slack when they do not receive a constant supply of cars. The stringency of slack is particularly hard on those firms not equipped with crushing plants and as the proportion of screened coal usually runs about two of lump to one of slack the price of the latter has been holding quite firm.

With the settling of the labor dispute in the Central Pennsylvania district better shipments are now expected from that territory, although on account of the extra concessions granted to the men it is felt that the price recessions in the future, if any, will be very slight as the mine owners claim that it is costing them almost twice as much to mine coal now as a few years back.

The demand for coal of all kind continues with unabated strength, but the selling agencies are experiencing much difficulty in doing business. All buyers are getting of the opinion that there must be further declines and are only asking for coal in small lots. Even at that coal is scarce and all offerings are made for prompt acceptance and immediate consignment.

It is reported from some quarters that shipments on contracts have been somewhat better of late, although many industrial plants report that they are still far behind in their receipts and the shippers continue to place almost the entire responsibility on the railroads for not delivering sufficient cars.

The prices per gross ton, f.o.b. cars at mines, are as follows:

Georges Creek Big Vein	$6.50@6.75
South Fork Miller Vein	6.50@6.75
Clearfield (ordinary)	6.00@6.25
Somerset (ordinary)	6.00@6.25
West Va. Freeport	5.50@5.75
Fairmont gas lump	6.00@6.25
Fairmont gas, mine-run	5.75@6.00
Fairmont gas, slack	5.75@6.00
Fairmont lump, ordinary	5.50@5.75
Fairmont mine-run	5.50@5.75
Fairmont slack	5.75@6.00

BALTIMORE

Bituminous prices break under a more liberal supply. Hard coal supplies still below needs. Talk of Government regulation is a factor.

Bituminous—Whether it be merely a question of a better car supply and movement for soft coal, or talk of Government regulation, or both, the market here is much softer. For a week now the Baltimore & Ohio R.R. has poured large quantities of fuel to Tide, and while this was readily absorbed under the steady demand, the prices quoted are now considerably off those of ten days ago. Quotations for delivery at the mines are also easier. Spot coal offerings, mine basis, are now only 25 to 50c. above those at the mine. The Western Maryland R.R. has kept up an excellent movement to this section. The Pennsylvania R.R. movement continues far below normal.

Prices to the trade at the mines, f.o.b., are about as follows, when coal is to be had at all for immediate delivery: Georges Creek, Tyson, $5.50; Somerset, $5; Quemahoning, $5.25; Clearfield, $4.75 to $5; Freeport, $4.50 to $4.75; Fairmont gas, three-quarter, $5; run-of-mine, $4.75; slack, $4.50.

Anthracite—The fact that the Pennsylvania R.R. is still delivering but a small part of the hard coal required in this territory holds the market unusually tight. Preferential treatment from some mines for this point can only be secured by paying premiums on the winter schedule, according to a number of the hard-coal dealers. This requires that the winter schedule, plus 25c., be maintained here for the present. Meanwhile, coal men are stocking what coal they can get through for emergencies, and are not relying on the much-talked-of Government inquiry. The majority of the dealers here feel that coal will not go any lower the present summer. The fact that it is being purchased at all sorts of figures is causing a great deal of confusion.

Ocean Shipping

COASTWISE FREIGHTS

A dearth of orders and "reasonable" freight rates for those who can furnish cargoes promptly is the present summary of the coastwise rate situation. Quotations are still nominal at $4.50@4.75, Hampton Roads to Boston. If a pooling arrangement is made it is possible that water freights will be somewhat modified. Dispatch would improve and more tonnage would therefore be available.

New York rates to Boston are still quoted at $2.50, but few actual charters are made; $1.75 is a quotable rate from New York to Long Island Sound ports.

OCEAN FREIGHTS

None of the charters that we effected during the past week have been reported, and there is very little change in the tonnage situation.

We would quote freight rates on coal by steamer as follows:

Europe	May 21	May 28
West Coast Italy	$100.00 about	$100.00 about
Marseilles	100.00 about	100.00 about
Spain(Atlantic)*	30.00@36.00	30.00@36.00
Spain(Med't'n)*	32.40@38.40	32.40@38.40
South America		
Montevideo	$28.80 about	$30.00 about
Buenos Aires	28.80 about	30.00 about
Rosario	30.00@31.20	31.20 about
Rio Janeiro	[3]27.00@30.00	[3]30.00 about
Santos	[3]30.00@32.00	[3]32.00 about
Chile(good port)	17.50@18.50	17.50@18.50
West Indies		
Havana	5.50@5.75	5.50@5.75
Cardenas, Sagua	6.75 about	6.75 about
Cienfuegos	7.50 about	7.50 about
Port au Spain	11.00 about	10.75 about
St. Lucia	11.00 about	10.75 about
St. Thomas	8.75@9.00	8.75@9.00
Barbados	11.00 about	10.75 about
Kingston	7.00@7.25	7.00@7.25
Curacao[1]	9.25 about	[1]8.75@9.25
Santiago	7.50 about	7.50 about
Guantanamo	7.50 about	7.50 about
Bermuda	6.00 about	6.00 about
Mexico		
Vera Cruz	9.00@10.00	9.00@10.00
Tampico	9.00@10.00	9.00@10.00

Note—Charters for Italy, France and Spain read: "Lay days to commence on steamer's arrival at or off port of discharge."

* Spanish dues for account of cargo. [1] And p.c. [2] Or other good Spanish port. [3] Net.

W. W. Battie & Co.'s Coal Trade Freight Report.

HAMPTON ROADS

Stocks lighter than for recent months. Prices without change. Conditions unsettled.

Light stocks are reported by all of the terminals with heavy demands from all sources. Prices are at recent levels with sales seemingly confined to small lots. Export and coastwise tonnage is moving in good volume. Now that such high freights are ruling for coastwise shipment the owners of steamers in this trade are bending every effort to minimize delays. This is a job in itself under present conditions of shortage of coal and cars and the resultant congestion of vessels. Conditions at Hampton Roads are somewhat unsettled, due to many reasons. There is much speculation as to just how the plans of the Coal Committee of the Council of National Defense will work out in practice. Dumpings have fallen off, being lighter than for the past month or so. Navy requirements are large and the coal trade is to be congratulated on the despatch given Naval vessels.

Prices for coastwise and foreign shipments are $7.50@8 per gross ton. Bunker coal $8@8.50 per gross ton plus 15c. trimming. Local deliveries $7@8 per net ton on tracks. Anthracite $8.50 per net ton delivered, for cash.

Dumpings at the Hampton Roads piers for the past several weeks were as follows:

	May 5	May 12	May 19	May 26
Nor. & West	104,677	165,326	146,730	105,640
Ches. & Ohio	104,567	104,252	117,143	83,666
Virginian	89,366	95,462	112,975	92,875
Total	298,610	365,040	376,848	282,181

Lake Markets

PITTSBURGH

After a flurry upward, spot market is back to old level. A Lake market established.

There was an advance in the spot coal market for a couple of days late last week, and a few transactions went through at as high as $6 for gas. The flurry was not explained and this week the market is back to the level quoted a week ago, about $5.

Lake shipments have been far from heavy thus far. The matter of rail transportation is being well handled, and coal does not go forward by rail unless the vessel capacity is to be at Lake port. The vessels have been slow, owing to the continuance of ice in Lake Superior, but doubtless the movement will soon be on in full force.

The future of coal prices is a conundrum. It is recognized in most circles that Government fixing of coal prices is a distinct possibility, though as yet it is not regarded as a probability. The operators have shown no great disposition to hold prices down for fear of encountering Government regulation, though it is possible, of course, that present prices represent some restriction on their part. In only one respect does the market situation give any hint of what is expected as to coal prices, and that is in the case of Lake coal contracts, which are now fairly well established at $4.50, business having been done lately at this figure. Many Lake coal contracts were made before the opening of the season, subject to a fixing of price later, and it is not known what was done in the case of such contracts, though $4.50 was probably not far from the settling price. As to contracts to Apr. 1, 1918, there is nothing at all, both buyers and sellers having dropped that subject. The remaining coal will be on a spot market basis until conditions become clearer.

We quote steam at $4.75@5 and gas at $5@5.25, per net ton at mine, Pittsburgh district. There is practically no distinction between slack, mine-run and ¾-in., all being worth about the same.

BUFFALO

Bituminous hardly so strong, due to agitation and Government activity. Jobbers hope for regulation. Cars more plenty on some lines. No improvement in anthracite.

Bituminous—The situation has not changed materially, but such change as has taken place is in the interest of the consumer. The prices are hardly as strong, though there is no real decline. Though it is not uniform there is a better supply of cars in some districts. This does not appear to be in a way to remain permanent, so that the relief is not reassuring. The consumer has a hard time in getting his coal and the jobber is spending a great part of his time looking for lost cars. He accuses the railroads of indifference and lack of system, so that the feeling between the two is not of the best.

Prices remain about as before, but with the note that they are hardly as strong as last week. Quotations, all per net ton, f.o.b. Buffalo:

Youghiogheny Gas	$6.25@6.75
Pittsburgh Steam	6.15@6.65
Ohio No. 8	6.10@6.60
Bessemer	6.00@6.50
Allegheny Valley	5.90@6.40
Cambria Co. Smithing	6.75@7.25
Pennsylvania Smokeless	6.85@7.35
All Slack	5.85@6.35
Cannel	6.50@7.00

Anthracite—The shippers agree that the demand is quite as insistent as ever and the shortage apparently as great. They of course know that the deliveries now far exceed the actual con-

sumption, though the season continues so raw and cold that much more coal has been burned than usual, as was the case last winter. The abnormally cold weather that set in late last fall, continues after six months without abatement and it has told on the coal consumption everywhere.

The city trestles do not run more than half the time. Some of them do well if they can do business half a day three days a week. There is no distress on the part of consumers, but there would be if the shippers and retailers did not unite in refusing to sell more than a wagon load to a single house. This gives excuse for all sorts of reports of conditions of distress in order to get more. It comes largely from the attitude of the independent operators, who are asking as high as $7.50 for their coal at the mines, when the mine price with the standard companies is only $4 for egg, which is in most demand. The interference of the Government in the matter is welcomed here. Many, even jobbers, would like to see the price of bituminous also regulated by authority.

The Lake trade keeps up, though the small number of receiving ports mentioned indicates that the small ones mostly have a working supply and can be dropped for the present. Clearances: 50,000 tons for Duluth and Superior, 23,300 tons for Fort William, 14,200 tons for Chicago, 6800 tons for Milwaukee, 6600 tons for Green Bay, 3300 tons for Houghton and 3200 tons for Hubbell; total, 197,400 tons.

TORONTO, CAN.

Trade active. Consumers anxious to store coal and dealers much behind in filling orders. Prices steady.

Conditions in the coal trade show little change. The supply of coal coming forward which would be sufficient to meet normal requirements is inadequate to the demand of many consumers anxious to provide in advance against a possible future shortage and dealers are much behind in filling orders. New orders are still being refused by the larger establishments. The railroads are delivering shipments promptly, but consignments have been a good deal delayed at the mines.

Prices show no change, quotations for best grades per short ton being as follows: Retail, anthracite, egg, stove, nut and grate, $9.50; pea, $8.50; bituminous steam, $9; slack, $8; domestic lump, $9; cannel, $10; wholesale f.o.b. cars at destination, three-quarter lump, $8; slack, $7.85; Pocahontas smokeless, $8.36.

DETROIT

Inadequate supply continues to maintain prices at high level on steam coal. Anthracite receipts light. Lake movement below normal.

Bituminous—There has been no material increase in the supply of steam coal coming to Detroit, conditions on transportation lines and at the mines continuing to hold shipments at a minimum. Three Southern roads over which much of Detroit's supply is moved have raised embargoes against movement to connecting roads in this district.

There has been no special increase in consumption of steam coal, but the demand continues active as most of the large industrial plants are operating at capacity. Jobbers are meeting with some difficulty in getting enough stock to supply requirements. Very little coal gets into the city before it is sold and the quantity of free coal on tracks is negligible. Egg and lump are quoted at $5 at the mines and some of the jobbers quote the same figures for the smaller sizes as well, while others place the price of nut, pea and slack at $4.50 to $4.75 at the mines.

Weather threatening frost has made the continued use of domestic coal a necessity and this has served to strengthen the demand beyond what might be expected at this time of the year.

Anthracite—Receipts of anthracite continue light and retail dealers who have been expecting delivery in May are for the most part disappointed. The failure of anthracite shipments to arrive is setting back the distribution among household consumers, an unusual number of who are already placing orders for their next winter's supply.

Lake Trade—Not very much change is apparent in the movement of coal over the Lakes. Delivery at loading ports is in small volume and many of the vessels which have contracts for handling shipments are unable to obtain cargoes and are making the upbound trips light. Even fuel supply for Lake steamers is not always readily obtainable and some vesselmen are said to have paid as high as $6 for bunker coal.

CLEVELAND

Local spot market quiet. Lake shipments going forward slowly. Contract market active.

The local market has been quiet the past few days notwithstanding the fact that the car supply at the mines has not improved. The principal reason for this situation is that Lake coal shipments have not been going forward at the rate they should at this time of the year on account of vessels being scarce for loading. It has been a good many years since Lake navigation has been held back by ice as it has been this spring and until the boats are able to catch up and maintain their schedules there is bound to be more or less tonnage thrown on the local market which should be applied on Lake contracts, and this tonnage will effect prices to a great extent. It is generally believed that these conditions will be changed as soon as the pooling arrangement goes into effect. June 1 is set as the date upon which the pool will begin its activities and it will be known as the Lake Erie Coal Exchange, with Frederick C. Baird, as commissioner, in charge.

During the past week the contract market has been active and several contracts have been closed totaling 220,000 tons of Pittsburgh No. 8 coal at prices ranging from $2.50 to $4 per net ton f.o.b. mine. The city of Cleveland has closed a contract with the Wright & Zehner Co., Cleveland, for 10,000 tons No. 6 mine-run to be furnished the garbage plant during the year beginning June 1, 1917, at $5.70 per net ton f.o.b. Cleveland. This is on the basis of $5 f.o.b. mine.

The Cleveland city council adopted a resolution authorizing the light commissioner to take steps towards acquiring a municipal coal mine. Commissioner Davis has announced that he has acquired an option on 15,000 acres of coal land in Monroe County, Ohio, and will appoint an expert to examine same. The entire tract would involve an expenditure of about $2,000,000.

Following are the market prices per short ton, f.o.b. Cleveland:

	Three-quarter	Mine-run	Slack
No. 8.....	$5.25	$5.25	$5.25
Cambridge..	5.25	5.25	5.25
Middle Dist.	5.25	5.25	5.25
Hocking.....	5.00	5.00	5.00
Pocahontas..	....	7.50	....

COLUMBUS

Market continues strong. Buying of domestic grades active and Lake tonnage is gradually increasing.

The trade has shown considerable firmness during the past week, especially in domestic grades, where buying on the part of retailers is fairly active. There is also considerable steam buying, especially by the larger mills.

Lake trade is now one of the important features of the industry. With the pooling arrangement completed a large tonnage is being moved from West Virginia and Ohio mines to Lake ports. The pooling arrangement has resulted in shippers sinking their differences and all working to give the Northwest an ample coal supply for the coming winter. Lake prices continue strong and the movement of ore is also active.

The steam trade is also active, although there is a slight lull in buying, as some of the larger users have secured a surplus, and are not in the market for as large a tonnage as formerly. Railroads are taking a fair tonnage. Producers as well as shippers are adverse to entering into contracts for steam tonnage and they are selling mostly on the open market. All steam grades are held at about the same level as little distinction is made between the various preparations.

Domestic trade is gaining in activity as the stocking season approaches. Retailers are now buying, believing that there will be a strong demand during the months of June and July. As a result domestic prices are strong and premiums are freely paid when deliveries can be made promptly. Rural dealers are good purchasers as the threshing season is approaching. Retail stocks are not large in any section.

Production is gradually increasing under the influence of a better car supply. The orders of the Ohio and Federal Government as well as railroad coöperation have improved the car situation to a marked degree. Production in the Hocking Valley is now given at 85 per cent. of normal, and other fields show a proportionate increase.

Prices on short tons, f.o.b. mines, are as follows:

	Hocking	Pomeroy	Eastern Ohio
Rescreened lump.....	$4.75	$4.75	.....
Inch and a quarter.....	4.75	4.75	$4.50
Three-quarter inch.....	4.50	4.75	4.50
Nut.....	4.50	4.50	4.50
Egg.....	4.50	4.50	.....
Mine run.....	4.25	4.50	4.50
Nut, pea and slack.....	4.25	4.25	4.25
Coarse slack.....	4.25	4.25	4.25

CINCINNATI

The market remains strong and fairly active, with demand running ahead of supplies, and prices tending upward. Transportation conditions are discouraging.

Weather has been such that domestic consumers have in many cases been forced to purchase coal for heating purposes, and large buildings and factories have also drawn on their supplies for heating. Car supplies remain much below requirements for anything like capacity production, although reports of loadings continue to show a heavy movement. The principal fear of operators now is that the coming summer months will witness a bad congestion at terminals, making it impossible to get cars back to the mines.

Prices remain at the high levels heretofore reported, with virtually no contracting, and more limited dealings as the season advances. The trade is confident as to the strength of the market, however, and is concerning itself chiefly with the problem of meeting the demand.

LOUISVILLE

Embargoes loosening and movement of coal increases, with prices strong. Car supply as insufficient as ever. Numerous investigations continuing.

Lifting of the embargo altogether at the Louisville gateway and as to utility coal at the Cincinnati gateway has tended to increase the movement of coal northward from the Kentucky fields and at the same time to stiffen the market. Numerous inquiries into the causes of the high prices are being continued, but so far have developed nothing except that they are tending to convince the public that the difficulties in getting coal are real.

Inquiries from industrial consumers are on the increase and there is very little coal for sale. Retailers are in the market frequently and, due to the fact that they are having to pay spot prices themselves they are tending to refuse credit to their retail customers. A car supply that is not improved and extremely spotty is reported on all sides, ranging from 30 to 60% for the week.

Very few producing companies are quoting prices. Eastern Kentucky sales, f.o.b. the mines, are being made at $5@5.25 for block; $5 for egg and around $4.75 on mine-run, nut and slack and screenings. Western Kentucky lump is quoted around $3, with few sales under that price, although one operator noted a sale of four cars at $2.75. There are practically no figures as to steam coals, although the range is seldom as low as $1.75 and usually over $2 on both mine-run and nut and slack.

Middle Western

GENERAL REVIEW

Anthracite shipments far below last year. Upper Lake ports have received very few cargoes. Not much change in prices in Mid-West. Car shortage very acute, and demand increasing from all quarters.

Due to the shortage of anthracite in Chicago and the Mid-West, premium prices have been offered to the shippers, but the regular shippers are taking care of the retailers direct in most instances, and the independents have been unable to secure any great amount of this coal, so that these offers have been of no avail. The shortage is very acute in Chicago, and shipments for upper Lake Ports have been delayed on account of ice blockades.

Special efforts are being made by dock companies to expedite shipments and some developments in that connection are expected shortly. Good results are hoped for through the arrangement to pool shipments from the mines to Lake Erie ports. Some boats have been loaded with half cargoes owing to the fact that there has not been full cargoes available at loading points, and vessel owners refuse to hold their boats.

Prices are much the same, although steam coal is somewhat easier, and other prices have eased off in a few cases. Industrial concerns were buying in large quantities a few weeks ago, but have been out of the market lately, and as a result steam coal is about on a level with the prepared sizes.

The shippers continue to feel the inadequate car supply, and this remains the principal problem for solution. Efforts are under way to relieve the situation, but very little improvement has thus far been afforded. Embargoes at congested terminals have interfered considerably with the return of cars and the arrival of shipments.

The Federal Trade Commission announced this week that it had placed its special agents in various markets to study price tendencies, and to warn the consumer against too great buying activity or too rapid price increase by the shippers or jobbers.

CHICAGO

Prepared sizes very strong. Easier prices on steam coals. Smokeless coals commanding higher prices. Car supply very poor.

Buying of domestic prepared sizes continues exceptionally heavy and others are coming through at about the same rate as during the winter months. Very little, if any change has been made in prices on sized coal, but a little decline from the high averages of the past two weeks is noted on screenings and mine-run. The demand continues fairly strong, with fewer large orders from industrial plants. Lower Lake Michigan ports continue to make purchases in the Indiana and Illinois fields, shipments via boat from the Eastern fields not arriving in sufficient quantities to relieve the situation.

The anthracite market is strong, and premium prices are being offered, but the arrivals are so few that only a small portion of the trade is being taken care of. Only two cargoes of anthracite arrived last week, the normal move-

ment being four or five big cargoes. All-rail shipments have been limited, and consumption by householders has been so steady that no supply has been added to the retailers' stocks.

In Franklin County the supply of cars has been 15 per cent. less the past week than any week for the past three. Demand continues strong for all grades from this field, and sufficient orders are now on hand to keep the mines in operation for the next 30 days. No advance has as yet been made in price, but it is understood that the current price on prepared sizes for June shipment will be 25c. higher than during May. A few premium prices have been paid the past week, not more than 50c., and to territory outside of that regularly taken care of.

In Williamson and Saline Counties conditions are about the same as in Franklin County, except that prepared sizes have commanded higher prices, the range being from $3.25 to $4.25, few orders being taken at the latter figure. Car supply is inadequate and not so good as during the past three weeks.

Springfield district mines report an improvement in the car supply, also that the market has been influenced adversely due to steam users temporarily withdrawing. Sized coal is in excellent demand.

The Indiana situation has not changed to any great extent. Steam coals are somewhat easier and domestic sizes are commanding good prices and the demand continues strong. A slight improvement is noted in car supply which probably accounts for the softening of the steam market.

Pocahontas has been scarce on the spot market due to embargo against the C. & O. The N. & W. is the only road that has been depended upon, and while some shipments have come through via that route very little has been available for the spot market. The retail dealers are oversold, and are unable to create storage piles.

The shipments of Hocking to this market are still short for the reason that prices here are not up to what they are in the East. Chicago is offering about 75c. less than this coal is commanding closer at home. The Lake trade is absorbing all the coal not needed for the East.

Splint and other Kanawha coals are about in the same position as Hocking, Eastern prices being 75c. to $1 higher than the Western price.

Chicago is not receiving any eastern Kentucky coal to speak of. The C. & O. embargo has cut shipments to the West, and Lake shipments have practically stopped. Account of the high prices of these coals the demand in Chicago has not been very keen, and very few of the retailers are handling any of this fuel.

Fulton and Peoria, also Will, Grundy, LaSalle and Bureau counties report a good car supply, averaging about 70 per cent., and sufficient orders on hand to keep the mines busy for the ensuing 30 days. Prices are nominal.

Quotations in the Chicago market are as follows, per net ton f.o.b. cars at mines:

	Springfield	Fulton & Peoria Cos.	Clinton & Sullivan Cos.	Green & Knox Cos.	Carterville
Domestic lump	$3.25	$3.25@3.50	$3.00@3.50	$3.00@3.25	$3.25@3.75
Steam lump	3.25	3.00@3.25	2.75@3.25	3.00	3.00@3.50
Egg	3.25	3.25@3.50	3.00@3.50	3.00@3.25	3.25@3.75
Nut	3.25	3.25@3.50	3.00@3.50	3.00@3.25	3.25@3.75
Mine-run	3.00@3.50	3.00@3.25	2.75@3.25	2.75@3.00	3.00@3.50
Screenings	3.00@3.50	3.00@3.25	2.75@3.25	2.75@3.00	3.00@3.50
	Williamson & Franklin Cos.	Saline & Harrisburg	Poca. & W. Va. Smokeless	Penna. Smokeless	Eastern Kentucky
Lump	$3.25@3.75	$3.25@3.75	$5.75@6.50	5.75@6.25	$5.00@5.75
Egg	3.25@3.75	3.25@3.75	5.75@6.50	5.75@6.25	5.00@5.75
Nut	3.25@3.75	3.25@3.75	.....	.....	5.00@5.75
No. 1 nut	3.25@3.75	3.25@3.75	.....	.....	5.00@5.75
No. 2 nut	3.25@3.75	3.25@3.75	.....	.....	.....
No. 3 nut	3.00@3.50	3.00@3.50	.....	.....	.....
No. 1 washed	3.25@3.75	.....	.....	.....	.....
No. 2 washed	3.25@3.75	.....	.....	.....	.....
Mine-run	3.00@3.50	3.00@3.50	5.50@6.25	5.75@6.25	5.00@5.75
Screenings	3.00@3.50	3.00@3.50	.....	.....	.....

Hocking Lump $4.50@4.75. Splint Lump $4.50@4.75.

Grundy, Will, LaSalle and Bureau counties:

Lump, egg and No. 1 nut	$3.25@3.50
Screenings—raw	2.75@3.25
Screenings—washed	3.00@3.50
Washed nut	3.25@3.75
Steam lump and mine-run	3.00@3.50

MILWAUKEE

Demand continues urgent with deliveries far behind. State officials investigating the prospects of a shortage next winter.

Dealers are unable to catch up with their orders, and most of them are from four to six weeks behind in deliveries. A dozen or more cargoes of anthracite have been docked thus far this season, but the demand is so great that stocks are quickly absorbed. Leading coal men profess that they cannot account for the heavy demand at this season of the year, when, in truth, they themselves are largely responsible for the panicky situation, as this is largely due to a disquieting trade circular issued by the wholesale coal dealers of Milwaukee to retailers and jobbers the latter part of April. It conveyed a weak assurance as to future supplies, which was more than overcome by the promulgation of a rule that all orders would be subject to ruling rates at time of delivery. The only thing positive about the announcement was that cash for supplies would have to be forthcoming within 30 days after delivery.

The winter schedule of prices is still maintained, and there is no prospect of a decline, according to the expressed opinion of a prominent dealer.

Gov. E. L. Philipp conferred with Mayor D. W. Hoan and a number of coal dealers and members of the Milwaukee County Council of Defense on Monday, May 28, concerning the prospect of an adequate supply of coal at reasonable prices in Wisconsin next fall and winter. A suggestion of coal tickets was advanced, but it was not seriously considered. It is the general opinion that if the transportation business clears up, Milwaukee will get a sufficient supply of coal to preclude the necessity of any such measure. Gov. Philipp will appeal to the farmers of the state to cut wood for their own use in order to relieve the fuel situation in the cities.

Approximately half a million tons of coal have been received by Lake thus far this season.

ST. LOUIS

Demand is spasmodic on practically all the grades, while operators have nothing to offer. Situation is much easier. Car supply unusually short. Practically no anthracite or smokeless but Arkansas movement is fairly good.

A peculiar condition exists in the St. Louis market. There is very little demand and practically no coal to offer. Short time contracts in the Standard field take about all the available tonnage on account of the car supply, which is between two and three days a week. There is also a shortage of miners. Embargoes by the L. & N. on shipments to Chicago in connection with the Wabash and C. & A. has forced much coal on the open market which has thus weakened.

Locally coal got down to as low as $1.50, for Standard lump, egg, nut and screenings. On the same coal that could go to Chicago via the I. C. the price was as high as $2.25 on the smaller sizes, with $2.50 for 6 in. lump. The operators are quietly investigating the tactics of the different roads that seem to be working in combinations toward manipulating the local market by preventing their equipment from going to points beyond, and something drastic is liable to happen.

There is nothing to indicate that prices will decline in the Standard market. The bottom has been reached, and the tendency from now on will be for higher prices.

In the Mt. Olive and Staunton field the prices for St. Louis shipments still remain at $2.25 on practically all sizes coming in here. The circular on country prices was withdrawn last week on account of the Wabash and other roads refusing any equipment for commercial loading other than public utility plants. This has forced the price in this field for country shipment to $3.50 for all domestic sizes, and about $3 for steam coal. The operators in this district seem to have the upper hand in the situation and are taking care of their business in a conservative and conscientious manner.

In the Williamson and Franklin County field the operators are beginning to make some impression on the accumulation of orders. Some of the mines in this field are sold up until July 1 on many sizes and none of them are able to take orders for prompt shipment at any price. Some coal from this field of the poorer quality has sold as low as $3.25 on domestic sizes. While the Williamson and Franklin County steam grades are not in good demand locally, but the country and northern call is unusually good. No contracts of any kind are being considered now. All operations are covered with short term contracts.

Car supply conditions seem to be getting worse. Some roads furnish two days a week, and the most any roads are furnishing is three days.

During the past week it is estimated that between 50 to 60 cars of anthracite came in, and not over 10 to 12 cars of West Virginia smokeless, while the tonnage of Arkansas was in the neighborhood of from 80 to 90 cars.

The retail conditions are a trifle quiet, with no changes in price. The local market circular is about as follows, per net ton f.o.b. mines:

	Williamson and Franklin Co.	Mt. Olive and Staunton	Standard
6-in. lump	$3.50@3.75	$2.75	$2.00
3x6-in. egg	3.50@3.75	2.75	2.00
2x3-in. nut	3.50@3.75	2.75	2.00
No. 2 nut	3.50@3.75	.....	.....
No. 3 nut	3.50	.....	.....
No. 4 nut	3.00	.....	.....
No. 5 nut	2.75	.....	.....
2-in. screen	2.75	2.25	1.75
2-in. lump	.....	.....	1.75
3-in. lump	.....	2.25	.....
Steam egg	3.50	2.25	1.75
Mine run	3.25	2.25	1.75
Washed			
No. 1	3.75	.....	.....
No. 2	3.75	.....	.....
No. 3	3.75	.....	.....
No. 4	3.25	.....	.....
No. 5	2.75	.....	.....

Rate on Williamson and Franklin Co. is 72½c. Rate on other fields is 57½c.

KANSAS CITY

Coal continues to move into the bins of householders at a rapid rate, operators and dealers urging the possibility of a shortage this fall. It is likely that there will be an increase in prices, but some operators advise against an advance, on the ground that the buying will be even further stimulated, and the difficulty of meeting demands will be enhanced.

Some dealers are unable to obtain Arkansas anthracite or semianthracite, which is going East and North at stiff prices. There is a tendency to substitute Cherokee for the semianthracite, domestic users resigning themselves to what they call war conditions.

The shortage of miners is becoming quite as important a factor as the shortage of cars and motive power. Missouri mines that usually are idle at this season, are operating, but at smaller capacity than their demands would warrant because men are not available.

General Statistics

THE CHESAPEAKE & OHIO

Comparative statement of coal and coke traffic from New River, Kanawha and Kentucky districts for the month of April, 1917-16 and the first four months in short tons:

To	April 1917	April 1916	Four Months 1917	Four Months 1916
Tidewater	425,541	399,727	2,050,591	1,775,834
East	253,204	227,082	1,026,529	1,009,634
West	1,238,529	1,342,105	4,359,875	5,132,194
Company's Fuel	151,401	165,812	806,270	827,372
From Connections	139,613	190,070	594,588	789,819
Total	2,208,288	2,324,796	8,837,853	9,534,853
Anthracite	635	704	3,569	3,842
Total	2,208,923	2,325,500	8,841,422	9,538,695
Coke	41,132	51,319	172,246	187,370

Foreign Markets

GREAT BRITAIN

May 10—The rise in values has been well maintained. Government tonnage has arrived plentifully, and free coal is still scarce.

Best Welsh steam	Nominal
Best seconds	Nominal
Seconds	$7.44@7.68
Best dry coals	6.24@6.48
Best Monmouthshires	7.20@7.44
Seconds	6.48@6.72
Best Cardiff smalls	4.80@5.04
Cargo smalls	4.32@4.56

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport, both net, exclusive of wharfage.

Freights—Rates are still firm, and the tendency is all upward. Free tonnage is scarcer than ever.

Gibraltar	$19.80	Port Said	$28.80
Marseilles	21.54	Las Palmas	19.20
Genoa	24.30	St. Vincent	19.80
Naples	23.58	River Plate	26.40
Alexandria	28.80		

Financial Department

Pittsburgh Coal Co. of New Jersey

This company reports for the year ended Dec. 31, 1916, as follows:

Total tonnage produced and handled was 18,709,926 net tons, a decrease of 424,510, or 2.22%.

Net working capital Dec. 31, 1916, was $9,092,106, an increase of $2,495,927, chiefly due to excess of earnings over dividends paid and unexpended depletion and depreciation reservations.

Net earnings and production would have been larger had use of facilities provided been permitted by factors of labor and transportation. Practically general suspension at mines occurred for about six weeks, a full month after heavy Lake shipments usually begin. An unusual scarcity of cars then set in, greatly added to by railway congestion, with results that, excepting during the first quarter, the company had no free shipping month and was not able to do more than ratably meet contract obligations for the year.

CONSOL. RESULTS FOR CALENDAR YEARS (INCLUDING SUBSIDIARIES)

*Production	1916	1915
Pittsburgh district coal	16,935,640	17,590,095
Hocking district coal	1,202,920	840,421
Illinois district coal	471,184	484,218
Kentucky district coal	100,182	219,702
Gross receipts	$29,375,788	$26,791,985
Oper. charges, maint., repairs, etc	$21,559,203	$20,426,372
Taxes accrued	858,127	798,299
xInt. on bonds, etc., of subsidiary cos	778,407	921,521
Losses, insurance, etc	587,253	425,956
Total deductions	$23,782,989	$22,572,148
Profits, after all expenses	$5,592,799	$4,219,837
Sinking funds and depletion coal lands	976,596	841,318
Depreciation plant and equipment	1,087,623	1,132,509
Net profits	$3,528,580	$2,246,010
Interest on bonds	384,654	592,486
Preferred dividends (5%)	1,350,898	1,353,590
Undivided profits	$1,793,028	$299,934
Surplus brought forward	10,843,515	10,543,581
Total surplus Dec. 31	$12,636,543	$10,843,515

* Production includes sundry purchases from other producers and coal used in manufacture of coke.
x Includes commercial discounts and interest.

CONSOL. BALANCE SHEET DEC. 31 (INCLUDING SUBSIDIARIES)

Assets	1916	1915
Properties	x$80,016,763	$82,063,104
Treasury stock—Pref. stock	5,000,000	4,928,200
Investments in stocks and bonds	2,743,261	2,544,803
Cash with trustees	628,078	268,693
Pension fund investments	169,381	110,206
Merchandise	4,358,521	5,928,678
Accounts and bills receivable	7,627,601	6,511,543
Cash	2,963,798	2,597,911
Total	$103,507,403	$104,953,138

Liabilities	1916	1915
Preferred stock	32,000,000	32,000,000
Common stock	32,000,000	32,000,000
1st M. bonds (see Ry. and Ind. Sec.)	19,280,000	19,746,000
Mtges. payable	136,720	166,999
Ctfs. of indebt	.....	200,000
Pension fund	164,276	155,574
Bills payable	2,492,735	5,114,295
Accts. payable	3,365,078	3,327,659
Stock purch. sur	1,034,778	1,021,992
Insurance funds	372,273	352,104
Sales contig't fd	25,000	25,000
Undiv'd earns	12,636,543	10,843,515
Total	$103,507,403	$104,953,138

x Properties owned Dec. 31, 1916, consisting of coal and surface lands, mine plants and equipments, railways, railway cars, docks on Great Lakes, etc., were: Coal lands and real estate, less allowance for depletion of coal lands, $61,226,488; plants and equipments, less depreciation, $18,790,276.

Contracts made during general contracting period were higher than for 1915, exclusive of increase in labor scale effective Apr. 1, 1916, were well in line with our competitors, but did not anticipate the runaway market for the last half of the year. Cost of production under new wage scale, and especially the heavy advance in all supplies, was under-estimated on a decreased tonnage. Restricted output did not permit the company to enter the market during the rise in values the latter part of the year, but confined it to its contract obligations.

The year during greater part was chaotic in effort and uncertainty, and while better results should have followed the great upturn in coal values, until the middle of the year had been well passed there was no clear indication the company would do as well as it did.

The large decrease in bills payable and increase in free working capital to an amount never before reached, against which there are no unusual obligations, indicate the virility of the company in view of the record that since 1907, except 1913, there has not been a full year of good business, such as 1917 promises.

Committee is engaged in working out details of plan of readjustment, following decision of court, and it is expected the plan can shortly be carried into effect and thereby stockholders will receive the balance of dividends for 1916, as provided by plan.

No result has yet followed efforts to secure equitable freight rates, which will be continued until present unjust relation to other fields is changed.

There is no general lack of coal in place; it is a question of production and distribution. Advance government estimate of country-wide production for 1916 is an increase of 15% over 1915, in every state but one. The increase for Pennsylvania is stated to be 10.8%; if so, no part applies to Pittsburgh district. Effort of railways to keep iron, steel and coke industries running practically 24 hours per day, or more than double average running time in previous years, demanded a like excess in car supply, which reacted heavily against operation, production, and cost at mines. The result was, coal from other states was shipped into the district at high prices and in quantities. The widely increased demand for all uses was not only in excess of current supply, but at close of the year stocks were practically exhausted in all territory to which our company makes shipment. So long as these conditions continue, demand and prices will be strong and high.

Demand for the year will be larger than can be produced with the present labor supply, even if transportation improves, and also taking our increased facilities into account. A higher average price will be secured upon all output, and results will be larger over 1916, under any outlook now probable.

Note—For previous annual report of this company see Vol. 8, p. 488.

Burns Bros.

Ernst and Ernst report, for the fiscal year ending Mar. 31, 1917, as follows:

In stating the values of real estate, buildings, equipment, fixtures, etc., at a value of $2,811,529, we have used the sound values as appraised at Mar. 15, 1917, reported by the American Appraisal Co. Their report shows a productive value of this property at the same date of $5,936,066.

Net profit for the year applicable to dividends on the preferred and common shares was $1,289,784, after deducting all depreciation and other charges.

In our comparison of the operating accounts for the past fiscal year we noted the cost of operating expenses, such as feed, labor, supplies, etc., showed a considerable increase over previous years, but that these larger costs, while large as to individual items, were helped materially by the larger increase in the tonnage of coal sold, and as a consequence the net results show only a slight increase per ton in the cost of handling, indicating efficient management in the operating end of the business.

We have given effect in the balance sheet submitted herewith to the authorized stock dividend of $1,375,000, payable May 12, 1917, and have decreased the surplus account accordingly.

We have made no appraisal of the asset of leases, contracts and good-will, $4,887,470. We noted, however, that the valuation on Jan. 1, 1913, was increased by the sum of $7810, owing to later acquisitions and a reduction of $133,031 was made out of surplus account. In connection with the valuation of leases, contracts and good-will, it is worthy of note that the total yearly tonnage handled since the merger has increased by some 325,000 tons and the net profits have shown a corresponding increase.

The total surplus of the company at this date amounted to $2,031,984 of which sum we have designated $561,250 as a separate fund to meet certain provisions under the terms of your preferred stock issue.

The company is to set apart for the purpose of sale 21,250 shares of the unissued authorized common stock, which is to be offered for sale, the proceeds to be applied for the retirement of the preferred shares now outstanding, it being the intention of the company, as stated to us by the officers, to convert the authorized amount of preferred shares into new common shares, making the total amount of authorized capital $12,000,000, all of which will then be represented by common shares, of which amount $9,000,000 will be outstanding, leaving $3,000,000 unissued for future requirements.

CONSOLIDATED INCOME ACCOUNT (INCL. N. Y. AND N. J. COS.)

Mar. 31 Years—	1916–17	1915–16
Tonnage sold	3,009,632	
Net sales (coal)	$15,235,910	$12,339,252
Cost of coal	11,670,831	
Gross profit	$3,565,079	
Oper., etc., exp., & depr.	2,643,705	Not stated
Net profits	$921,374	
Other income	368,410	
Total income	$1,289,784	$678,810
Pref. dividends (7%)	$120,000	$127,156
Common dividends	(5) 275,000	(5) 275,000
Balance, surplus	$894,784	$276,654

PROFIT AND LOSS ACCOUNT, JAN. 1, 1913, TO MAR. 31, 1917

Net sales of coal	$54,407,570
Cost of sales and expenses	51,095,130
Net profit	$3,312,440
Boat and wheelwright earns., int., and appreciation of property, etc	1,788,754
Total income	$5,101,194
Retirement of pref. stock	$561,250
Deprec'n of def. assets and reduction of good-will	270,922
Dividends paid and declared	2,865,826
Balance, surplus	$1,403,196
Surplus Jan. 1, 1913	67,539
Total surplus Mar. 31, 1917	$1,470,735

CONSOL. BALANCE SHEET, MAR. 31

Assets—	1917	1916
Real est., bldgs., equipment, etc	$2,898,212	$1,723,035
Leases, contracts and good-will	4,887,470	4,887,470
Invest. in Burns Bros. Ice Corp	165,001	229,904
Other investments	12,911	
Cash	400,092	305,143
Notes and accts. rec	3,351,879	2,359,552
Invent. (at cost)	515,764	589,480
Deferred assets	202,481	233,591
Total	$12,433,810	$10,328,175

Liabilities—	1917	1916
Preferred stock	$1,699,900	$1,811,900
Common stock	5,500,000	5,500,000
Res. for com. div	1,375,000	275,000
Purch. mon. oblig	167,975	202,975
Accts. payable	1,600,799	1,204,130
Accr. taxes, etc	39,808	
Oper., etc., res'ves	18,344	62,232
Surp. for retirem't of pref. stock	561,250	a558,362
Profit and loss	1,470,735	713,576
Total	$12,433,810	$10,328,175

a Includes $298,062 appropriated for retirement of pref. stock, $200,000 special reserve for preferred and $60,298 reserve in respect of appraisal.